School of Psychology and Speech Pathology

Research About Listening: Everyday Music Interactions

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Abstract

This thesis offers new research in the area of music psychology, by attempting to explain the place that music occupies in everyday, modern life. Through a series of studies, the work aims to identify and present in a theoretical context those factors that underlie our daily interactions with music in the current technological climate. Specifically, the research investigates how music is accessed and selected, addresses notions of control and choice concerning listening, and investigates individual responses to music in terms of mood and perceived effects.

The first study investigated how individuals encounter and select music in everyday life through the Experience Sampling Method. Overall, the findings imply that the greater control that technology affords to individuals, the more complex their patterns of everyday music usage; and, that listeners are active consumers of music rather than passive listeners. Consequently, the research detailed in Chapters 4 and 5 further investigate this aspect of control and choice related to everyday listening. These studies consider listening with regard to Mehrabian and Russell's (1974) theory of environmental psychology, which asserts that people's interactions and interpretation of their contextual surroundings result from variations in three factors: pleasure, arousal, and dominance. The results of this research demonstrate that *dominance* (operationalized as control or choice in terms of music listening), is a key feature in explaining everyday music listening.

Importantly, this work addresses people's musical behaviors and responses by including both individual and contextual variables in the analyses. One technologically-relevant way of contextualizing listening is by researching playlists, individual lists of songs chosen and ordered by listeners (Chapters 3 and 6). Research that considered music listening preferences through playlists for different situations showed that preferences differed along two dimensions (arousing and sophisticated); and that music chosen for situations is subject to injunctive norms (the degree that the situation suggests/commands certain music be listened to by the individual), which may be related to the construct of dominance. Moreover, playlist-based listening preferences of individuals are

related to macro-level influences, such as seasonal variations at different times of the year (Chapter 6).

Additionally, a psychological approach is taken to considering how music is accessed. Chapters 7 and 8 consider whether psychological variables can predict everyday listening practices. Possessing a music-technology based identity relates to innovativeness and self-efficacy, and results indicate there may be utility in applying other constructs from consumer psychology (such as opinion leadership) to explain individuals' use of different listening devices and song selection behaviors. Moreover, psychological variables and technological behaviors predicted whether individuals identified different types of advantages inherent to their listening devices and employed playlist-based listening versus shuffle-based listening.

Finally, as a first step towards understanding online music fan practices from an explicitly psychological perspective, chapters 9-11 consider music-related behaviors in the context of online social network usage. Results indicate that having an interest in celebrities and embracing social media was associated with valuing musician interaction via social networking. Moreover, this opinion predicted actual behavioral interaction with musicians using social networking websites. When considering online fan practices on Facebook, rating music as important in one's life and spending more leisure time on Facebook were associated with performing music-related tasks on the site. Additionally, self-efficacy predicted use of listening applications, for which seven different motivations were established.

In sum, the findings presented throughout this thesis indicate that musical behaviors are embedded in the daily stream of life, and that listening technologies have increased listeners' ability to choose and control the music that they hear. Moreover, because technology has affected the way people listen to music, it needs to be accounted for in the theoretical explanations of these behaviors. In particular, the implications of the present work include the importance of considering psychological variables to understanding everyday music listening and, further, this work has begun to establish the utility of Mehrabian and Russell's model to understanding everyday listening.

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"So ladies and gentleman, and boys and girls
This one goes out to the people who helped me most in the world
Hey brothers and sisters, hey women and men
I dedicate this to the people, who was down since way back when"
(Dawkins, 2014)

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Lastly, as a reminder to my students and to myself: Dream Big. Always, always dream big. Now, as the song goes, “let’s move along the song and try to find the plot” (Brockenborough et al., 1993).

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Thesis Overview

The diagram below presents an overview of the studies included in this thesis.

Section One: Contextualizing Listening

Chapter 2 (published)
N = 177
Data Collected: U.K.
Focus: An overview of how music is experienced everyday
Method: Experience Sampling Method

Chapter 3 (under review)
N = 344
Data Collected: Worldwide
Focus: Contextualizing listening via playlists
Method: Questionnaire
Framework: Mehrabian and Russell's P-A-D model

Chapter 4 (under review)
N = 569
Data Collected: U.S.A., Australia
Focus: In situ responses
Method: Day Reconstruction Method
Framework: Mehrabian and Russell's P-A-D model

Chapter 5 (under review)
N = 216
Data Collected: Australia
Focus: In situ responses
Method: Experiment
Framework: Mehrabian and Russell's P-A-D model

Chapter 6 (under review)
N = 100
Data Collected: U.K.
Focus: Macro-level influence on playlist preferences
Method: Questionnaire
Framework: Doise's Hierarchy

Section Two: Accessing and Selecting Music

Chapter 7 (revisions under review)
N = 342
Data Collected: U.K., U.S.A.
Focus: Listening devices
Method: Questionnaire
Framework: A psychological perspective

Chapter 8 (revisions under review)
N = 275
Data Collected: U.K., U.S.A.
Focus: Selection behaviors
Method: Questionnaire
Framework: A psychological perspective

Section Three: A Focus on Social Media

Chapter 9 (revisions under review)	**Chapter 10** (revisions under review)	**Chapter 11** (accepted for publication)
N = 239	N = 211	N = 211
Data Collected: U.K., U.S.A.	Data Collected: U.K., U.S.A.	Data Collected: U.K., U.S.A., Australia
Focus: Social media fan practices	Focus: Music fan practices on Facebook	Focus: Facebook music listening applications
Method: Questionnaire	Method: Questionnaire	Method: Questionnaire
Framework: A psychological perspective	Framework: A psychological perspective	Framework: Uses and Gratifications Theory

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Chapter 1: Introduction

In earlier centuries, the only way to experience music was by performing or attending live concerts or church, or to happen to pass by a street musician. However, the new technologies of the twenty-first century are influencing the ways in which people interact with music (Avdeeff, 2012; Nill & Geipel, 2010; North, Hargreaves, & Hargreaves, 2004; Sloboda, Lamont, & Greasley, 2009): the ways in which we "hear, listen to, engage with, value, and use music have changed dramatically" (North et al., 2004, p. 42). The popularity of digital music files and the Internet have changed the way individuals are able to access, acquire, and store music (Kibby, 2009), shifting the ideas of "music consumption" and "music consumers" (Molteni & Ordanini, 2003). To a greater degree than hitherto, people are able to control what they hear in many environments (North et al., 2004; O'Hara & Brown, 2006)—mp3 players and mobile telephones, for instance, allow people to control and expand upon when, where, and how they experience music (Heye & Lamont, 2010; Juslin, Liljeström, Västfjäll, Barradas, & Silva, 2008; Sloboda et al., 2009). These devices, small enough to fit in a pocket, permit users immediate access to ever expanding amounts of music anywhere (Brown & Sellen, 2006). The ubiquity of music in everyday life means that it is important to question how and why people experience it (Chamorro-Premuzic & Furnham, 2007).

While academic consideration of music's digital revolution is not new, 2013 statistics indicate an accelerating shift towards digital music technology as the primary means by which people listen to and discover music (British Recorded Music Industry, 2014). Portable media devices are common: in 2010, more than one-fifth of media consumption occurred on mobile devices (Rideout, Foehr, & Roberts, 2010). Forty-three percent of U.S. adults owned an mp3 player as of January 2013 (http://www.statista.com/statistics/256770/percentage-of-us-adults-who-own-a-mp3-player/). As of 2010, Apple had sold more than 275 million iPods (http://www.apple.com/pr/products/ipodhistory/), and these and similar devices continue to sell in huge quantity: in the first fiscal quarter of 2013 alone, Apple sold 12.7 million iPods (http://www.apple.com/pr/library/2013/01/23Apple-Reports-Record-

Results.html). Further, in the U.S., music and entertainment application ("app") use in 2013 grew 78% over 2012 (Khalaf, 2014). When observing urban commuters, one-ninth engage with music devices globally (Liikkanen & Lahdensuo, 2010). 56% of all smartphone owners in the U.S. have downloaded some type of music app, with nearly half of smartphone owners downloading the Pandora app in particular (Edison Research, 2013). These figures concerning music app downloads are even more impressive considering that users are choosing to add to any apps that come initially pre-loaded on smartphones. Moreover, U.S. teens have approximately seven music apps on their smartphones (Neilsen Company, 2014) demonstrating the immense popularity of such listening apps.

The ways in which people can interact with music on the Internet are continuing to expand and evolve. Internet radio, for instance, is gaining in popularity. Edison research estimated that the monthly audience for online radio (both AM/FM broadcasted radio stations online and audio content only available online) included 120 million Americans in 2013 (Edison Research, 2013). 21% of American mobile telephone owners have used their telephones to listen to online radio in their car (Edison Research, 2013). With regard to streaming, the Neilsen Company (2014) reported that consumption in the U.S. grew 32% in 2013 over 2012, with 68% of U.S. consumers streaming music in 2013. Nor is this trend restricted to the U.S.A.: in the U.K., for example, listeners streamed 7.4 billion songs in 2013, double the number of 2012, so that the value of premium account subscriptions to music streaming services surpassed 100 million pounds sterling, and the total market value of streaming is much higher, as it includes considerable income from advertising revenue (British Recorded Music Industry, 2014).

Even YouTube, a website devoted to videos, is a primary site of musical engagement, especially for youth (Avdeeff, 2012). 38.4% of all of the YouTube views are of music, and 19.1% of all YouTube videos uploaded are music-related (Houghton, 2014). YouTube's monthly U.K. audience topped 22 million people in 2013 (British Recorded Music Industry, 2013), so that at the time of writing YouTube streams are about to be included in the country's music sales chart (http://www.bbc.co.uk/news/entertainment-arts-26238575), mimicking the

inclusion of such streaming data in the U.S.'s Billboard chart from 2013 (http://www.billboard.com/biz/articles/news/chart-alert/1549398/billboard-nielsen-add-youtube-video-streaming-to-its-platforms). Alongside streaming subscription services, websites like YouTube allow for individuals to access any song on demand with a simple search without it needing be purchased or stored on their computer or mobile device.

As these statistics illustrate, the manner and perhaps also the frequency and the very definition of people's engagement with music is changing as an apparent consequence of the digital revolution. Avdeeff (2012) wrote,

> it is not about what has changed since the proliferation of digital playback devices, but rather, that digital technology is the primary means by which most people consume music and, as such, it affects the relationship between music and listener (p. 269).

Consequently, an understanding of how individuals use music in the everyday context must account for these technological advancements (Gaunt & Hallam, 2009).

1.1 Underlying Tenets

In order to focus on the use of music in daily life, the work presented in this thesis is based on two fundamental contentions, namely that the everyday contexts in which music is experienced are diverse and that current technologies are firmly embedded in our daily experiences. As the statistics cited above demonstrate, with the ubiquity of the Internet and current listening technologies, never before has our access to music and our ability to interact with it been more extensive. Of course, consuming music is not

> simply about listening but involves the ways it becomes integrated into our personal and social lives. This is very much determined by the technologies through which we experience it: how music is distributed, rendered, purchased, organized, shared, chosen, listened to, interacted with and repurposed (O'Hara & Brown, 2006, p.3).

With changes to our ability to interact with music, our relationship to and use of music may be changing as well.

The everyday context of music listening is of course fundamentally complex and varied. The wide variations that exist in the everyday contexts in which people experience music inevitably make research on the subject a complex undertaking, but the increasing portability and contextualization of music means that it is important that research shifts to how people experience music in these naturally occurring contexts (Lamont & Greasley, 2009). In turn, this necessitates that research is contextually situated outside of the laboratory and in "the real world." This is, in effect, a paradigm shift for the discipline compared to its position in the pre-digital era. While the cognitive and developmental branches of the psychology of music addressed many of the issues underlying music behaviors, they did so using laboratory-based, experimental methods. However, by the 1980s, researchers, including Vladimir Konečni and Dean Simonton, began questioning the utility of such research to fully explain real responses to music (North & Hargreaves, 2008). They argued that much of the laboratory research from the past fails to explain the modern-day reality of music listening (Juslin et al., 2008; Lamont & Greasley, 2009; North & Hargreaves, 2008; Sloboda et al., 2009): Konečni (1982, p.500) pertinently asserted that music is enjoyed, "in the stream of daily life." Support for such a paradigm shift in the field of music psychology has arisen in recent years, with a focus, for instance, on the purpose and implications of music behaviors and the inclusion of naturalistic research methodologies (North & Hargreaves, 2008).

Moreover, as Hargreaves and colleagues assert through their reciprocal feedback model, responses to music are shaped by three factors—the music, the individual, and (crucially in the context of the present research) the context (Hargreaves, Miell, & MacDonald, 2005; North & Hargreaves, 2008). The reciprocal feedback model of musical response has, at its core, the interaction between the musical stimuli, the situation in which listening takes place, and the characteristics of the listener. The music can be analyzed in different ways, including its style and genre but also its complexity, familiarity, and prototypicality. The situations in which listening takes place are varied, with key variables related to where and how the listening happens, the presence of other people, and whether other ongoing activities take place. Listeners vary

with respect to individual difference factors (such as age, gender, and personality) as well as their musical preferences and identities. The model was named "reciprocal-feedback" because any of the three determinants can interact and influence the others in any direction to determine the response, which has physiological, cognitive, and affective components (Hargreaves, 2012; Hargreaves et al., 2005; Hargreaves & North, 2010).

Consequently, in order to capture the context of music listening, research must consider the available technology, and so preserve the authenticity of the subject matter as much as possible. This includes, for instance, using the Internet for data collection (which has become more common – Birnbaum, 2004; Reips, 2006). As the research should not be limited to the laboratory, neither should it be limited either in terms of sample participants. Much of the laboratory research conducted in academia relies on an undergraduate population, as this is readily available for researchers. However, "lab-based undergraduates can only tell us so much" (North & Hargreaves, 2008, p.8). Everyday listening behaviors are not limited to a single age range of individuals, and with the emphasis on technology and its possible effect on people's musical behaviors, it is important to conduct research that includes a wider pool of participants than undergraduates (which may illuminate any possible generational/age differences in music use).

1.2 Positivism and Relativism

There are two major views within psychological research: the positivist and relativistic approaches. The positivistic approach is defined by a number of assumptions. Firstly, direct experience and observation leads to objective knowledge, or facts. The positivist approach to science is value-free, and all scientific propositions are founded on facts, against which hypotheses are tested. This testing typically involves quantitative data with the aim of developing scientific laws and causal relationships. Positivists argue that the assumptions and methods of natural science can be used in social science also (Robson, 2002).

In contrast to positivism, relativism rejects the notion that one can view the social world in the same way as other natural objects. It maintains that

human behavior must be interpreted in relation to people's subjective experiences: situations are fluid, and people help create and interpret their own realities (Cohen, Manion, & Morrison, 2000), partly as a function of their ideas and motivations within particular contexts (Robson, 2002).

Since social phenomena, such as individuals' experiences of music, depend on social interactions and interpretations, the relativist approach is arguably most appropriate to the present research. To study individuals' everyday uses of music, we must acknowledge that individuals are continually interacting with many factors (including those represented by the music and the context in which it is experienced) while creating their own everyday listening situations. As such, this thesis adopts a relativistic rather than positivistic approach. One particular feature of this is that individuals are considered as active consumers, rather than passive recipients, of music (O'Hara & Brown, 2006).

1.3 Psychological Frameworks

Within this relativistic framework, the present research draws from three sub-disciplines in psychology. These approaches, namely social psychology, music psychology, and environmental psychology, overlap considerably, since the former represents an approach, and the latter two represent objects of study. However, firstly, it is useful to look at the individual fields and then discuss how they intersect to inform the approach adopted by the present work.

1.3.1 Social psychology.

Defining social psychology is an inevitably complex task, due to the field's broad scope and rapid rate of change. While encompassing a variety of interests, most researchers focus on understanding, "how and why individuals behave, think, and feel as they do in social situations—ones involving the actual or imagined presence of other persons" (Baron & Byrne, 2003, p.5), so that we might define social psychology as, "the scientific field that seeks to understand the nature and causes of individual behavior and thought in social situations" (Baron & Bryne, 2003, p.5). While overlap exists between social psychology and

other branches of psychology, it differs from them in its emphasis on the behavioral processes, causal factors, and results of the interactions between people and groups (Lindgren, 1973). While there is no single consensual definition, as social psychology shares subject matter, methodology, and theories with various cognate disciplines (Graumann, 1996), there is one particularly notable aspect of social psychology relevant to the present research. As Stephenson (1996) points out, it

> is in the nature of social psychology to be applicable. Many core processes studied by social psychologists–persuasion, communication, intergroup relations, and others–are institutionalized in numerous areas of social, organizational and political life. Hence they offer good opportunities for social psychologists to apply their knowledge and, reciprocally, for social psychology itself to be enhanced directly by study of these phenomena in real-life settings (p. 566).

Further, as Lindgren (1973) argued, many concerns, at least in the western world, focus not upon biological survival, but on relationships, behaviors, and the social interactions of individuals (e.g., understanding our ability to cope with social problems), and it is these practical topics that social psychology studies. The desire to apply findings and principles from social psychology to practical problems is not a new idea, but the interest in doing so continues to accelerate with many beneficial results (Baron & Byrne, 2003).

1.3.2 Environmental psychology.

Environmental psychology developed in recognition that people are a product of the interaction between their biology and the environment. Foundationally, the environmental psychology framework contends that aspects of the physical environment continually impact upon people in those environments, but that people modify the environment also (Bell, Greene, Fisher, & Baum, 2001; Cave, 1998). Dissatisfaction with the ecological validity of laboratory studies prompted enthusiasm for the development of this line of inquiry that emphasized the *real world* applicability of findings (Bonnes & Bonaiuto, 2002). Environmental psychology is constructivist in nature, as *reality* is regarded as relative to individual interpretation which itself is subject

to the influence of other individuals and environments (Wapner & Demick, 2002).

Five key characteristics that arguably make the field unique also make it applicable to the present work. The first, and most important, characteristic emphasizes studying environment-behavior relationships as a unit as opposed to separating them into their two distinct components. This assumption contends, similar to Gestalt psychology, that the whole is greater than the sum of the parts; and distinguishes the field from others in psychology (Bell et al., 2001). Related to this point, the second characteristic underlying the field is that these behavior-environment relationships are *inter*-relationships. The influences occur in *both* directions—environmental influences affect behavior, and behavior also changes the environment (Cave, 1998).

Third, research in environmental psychology is usually undertaken for both theoretical and applied purposes, and is typically problem-oriented. Research problems are framed by, and result from, recognition of problems and interactions in everyday life (Cave, 1998; Gifford, 2002; Wapner & Demick, 2002; Wohlwill, 1970). Moreover, because of the nature of the topic under investigation, research is commonly performed outside of the laboratory with the goal of preserving the integrity of the setting. This allows for the environment to be compromised as little as possible and increases external validity (Bell et al., 2001; Cave, 1998).

Fourth, environmental psychology is considered an international and interdisciplinary study of environment and behavior (Bell et al., 2001). The field is intertwined with others, and so is also relatively open to and quick to engage with others. Finally, researchers in the field make use of an eclectic methodological toolkit that facilitates attempts to answer research questions (Bell et al., 2001). With many varied contexts and research questions, there is no single or best way to design and perform research: decisions are instead based on the phenomenon under study and the goals and purposes of the research (Werner, Brown, & Altman, 2002). Indeed, several methods are often used together in order to create a more comprehensive analysis (Cave, 1998). While the experimental method is one option, fieldwork is popular, as it situates the research in real-world settings with the aim to maintain ecological validity,

and uses methodologies such as self-reports, cognitive mapping, surveys, interviews, observational techniques, task performance, trace measures, and archival research.

1.3.2.1 Mehrabian and Russell's PAD framework.

One specific approach to environmental psychology that has been particularly influential on the research reported here is Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance (PAD) theory of environmental psychology, which aims to explain the, "effects of the physical environment on emotional response of the persons within it" (Mehrabian & Russell, 1974, p.3). The PAD theory asserts that people's interactions and interpretation of their contextual surroundings result from variations in three factors (Andersson, Kristensson, Wästlund, & Gustafsson, 2012; Hines & Mehrabian, 1979; Mehrabian & Russell, 1974). The first two are pleasure and arousal. Pleasure-displeasure is a feeling state, such as feeling good or happy, and entails whether a person perceives the environment as enjoyable or not enjoyable. Arousal refers to the extent to which one feels stimulated, alert, or active in an environment; and is conceptualized as a feeling state ranging from sleepy to active. The third factor, dominance, refers to the extent to which one controls one's environment, and feels restricted or submissive versus free and domineering (Mehrabian & Russell, 1974; Yalch & Spangenberg, 2000). "The resulting emotional state then regulates the individual's behavior (e.g., preference, approach, ability to work or affiliate) in a situation" (Mehrabian & Russell, 1974, p.55). Thus, environments can encourage approach behaviors or instead lead to avoidance behaviors. The concept of approach-avoidance is defined in terms of four categories, namely time, exploration, communication, and satisfaction (Donovan & Rossiter, 1982; Yalch & Spangenberg, 2000). Time relates to the desire to physically stay in or leave the environment, while exploration concerns the desire or willingness to look around and explore as opposed to avoiding moving through or remaining inanimate in an environment. Communication refers to the willingness to communicate with others as opposed to avoiding interaction or ignoring attempts at communication by others. Lastly, satisfaction refers to the degree of

enhancement or hindrance of task performance (Donovan & Rossiter, 1982; Yalch & Spangenberg, 2000).

In terms of the PAD domains, pleasure increases approach behaviors, and any aspect of the environment, including the individual, may generate pleasant stimulation. Even pleasant stimulations not contingent on the approach behavior, due to their association with a pleasant environment, will add to the pleasantness and, therefore, support approach behaviors (Mehrabian & Russell, 1974). Arousal level mediates approach-avoidance behaviors (Donovan & Rossiter, 1982; Hines & Mehrabian, 1979; Mehrabian & Russell, 1974). In terms of approach behaviors, arousal functions in an inverted-U pattern: extremely high or low levels of arousal are avoided while environments of moderate arousal levels best encourage approach behaviors. As with pleasure, arousal is determined both by the individual and the environment (Mehrabian & Russell, 1974).

Mehrabian and Russell (1974) were uncertain as to how dominance related to approach-avoidance behaviors due to a lack of evidence; and noted that an emphasis on pleasure had meant neglecting dominance. Indeed, in subsequent work, a "pleasure-arousal" hypothesis was formed to describe approach-avoidance (Hines & Mehrabian, 1979). In this model, approach behaviors correlate with the level of pleasure and pleasure interacts with arousal (Hines & Mehrabian, 1979). Considering approach-avoidance behaviors in a retail setting, Donovan and Rossiter (1982) found evidence for pleasure and the pleasure-arousal interaction, but not for dominance in the prediction of approach-avoidance behaviors. Consequently, much research has ignored dominance, and that which has considered it ahs produced uncertain results (Yani-de-Soriano & Foxall, 2006). However, more recent work including dominance has stressed the usefulness of considering it in relation to approach-avoidance behaviors and concluded that dominance is a, "valid emotional dimension and, as such, is an integral part of the measurement of the emotion-eliciting qualities of environments and mediates approach–avoidance behavior" (Yani-de-Soriano & Foxall, 2006, p. 411). Dominance has demonstrated cross-cultural validity and reliability and the three domains together have been

shown to account for 27-37% of the variance in approach-avoidance behaviors (Yani-de-Soriano & Foxall, 2006).

Mehrabian and Russell's PAD framework offers an interesting approach to explore in relation to individuals' daily music interactions. Because it accounts for the individual's interactions and interpretation of his or her contextual surroundings, it may be that the accompanying combinations of pleasure, arousal, and dominance hold the key to understanding an individual's musical behavior in different situations. Specifically, pleasure, arousal, and dominance in a music listening episode can be conceptualized as one's degree of preference (or liking) for the music, how arousing one finds the music, and one's degree of control over hearing the music respectively.

Indeed, music has often been considered in terms of pleasure and arousal. In 1971, Berlyne proposed that pleasure interacts with arousal and complexity in an inverted-U function (Huron, 2009), so that moderately-arousing music is liked most. Within this theory, there are three types of stimulus variables that influence the extent to which the music is arousing: these are psychophysical (the intrinsic physical properties), ecological (learned associations between the stimulus and other events), and collative (informational properties of the stimulus), which are particularly important as they include the degree of familiarity and complexity of the music (North & Hargraves, 1997). Moreover, an individual's baseline level of arousal and the arousing properties of the music interact to influence preference (Lamont & Greasley, 2009).

Researchers have investigated many musical characteristics that contribute to arousal and complexity in particular, although there is a dearth of research on naturalistic music listening contexts. That research which does exist indicates that musical preferences vary according to the situation, reflecting the emotional connotations of those situations, and in a manner such that more similar situations gave rise to similar perceptions of important characteristics of the music for those situations (North & Hargreaves, 1996c). Similarly, research in retail settings shows that customers respond to music in a manner that appears related to consumer behavior: preference for music, for instance, has a significant effect on consumers' cognitive and emotional states,

which, in turn, affect approach and affiliation behaviors toward commercial environments (Sweeney & Wyber, 2002). North and Hargreaves (1996a) focused on music preference in particular, demonstrating a positive correlation between liking the music and liking the atmosphere of a cafeteria and the likelihood of approaching an information stall. Moreover, musical preference relates to arousal goals in a situation: individuals preferred "high-arousal music" for aerobic exercise activity but "low-arousal music" during guided relaxation. However, when stating preferences after relaxing or exercising, participants' music selections suggested attempts at moderating their arousal levels back to baseline levels (North & Hargreaves, 2000), indicating that different arousal states may be considered appropriate for different situations (Hargreaves & North, 2010). An individual's opportunity to use arousal-based strategies in everyday music listening in situ is of course growing as digital technology makes music more portable.

In contrast, although there has been a limited amount of research on pleasure and arousal responses to music experienced in naturalistic contexts, previous research on music has tended to almost completely ignore dominance. Similarly, research on the Mehrabian and Russell (1974) model has debated the importance of this factor partly because research was able to obtain impressive findings using just the pleasure and arousal dimensions (e.g., Desmet, 2010; Donovan, Rossiter, Marcoolyn, & Nesdale, 1994; Mattila & Wirtz, 2001). However, dominance seems intuitively relevant in the context of digital-era music listening. Although situations that provoke pleasure and dominance are most preferred (Mehrabian, Wihardja, & Ljunggren, 1997), in everyday life people are not always in control of the music they encounter. However, as a consequence of digital technology and the myriad ways we encounter music, dominance (conceptualized as control related to the music) may be a key component to understanding everyday listening. As such, Mehrabian and Russell's PAD framework offers a viable model to test in relation to real world music interactions.

1.3.3 Psychology of music.

The psychology of music began its development as an independent discipline in the middle of the nineteenth century with preliminary research in the perception of sound (Thaut, 2009); and developed in the 1970s and 1980s into two clear sub-fields: cognitive psychology of music and developmental psychology of music. While not wholly independent of each other, these two sub-fields continued to grow, establishing an informal paradigm for music psychology (North & Hargreaves, 2008). However, the most notable shift in the field since the mid-1980s has concerned a shift toward social factors, and the emergence of an identifiable social psychology of music (North & Hargreaves, 2008).

1.3.3.1 Social psychology of music. North and Hargreaves (2008) conceptualize the social psychology of music via Doise's (1986) hierarchy, which approaches social psychology using four different levels of analysis. These four levels, intraindividual, interindividual, socio-positional, and ideological, start respectively within the individual and become increasingly broad in terms of social position and impact. North and Hargreaves (2008) also note that the field employs a *topics-based* approach to research, which has the consequence of "little or no cross pollination between" closely related research topics (p.5), so that there is a need to consider all approaches (e.g., North American and European perspectives). Secondly, they note that there has also been a focus in applying research findings to the practical world. For instance, to open their 2008 book, *The Social and Applied Psychology of Music*, North and Hargreaves asserted that, "an approach based in social and applied psychology can explain the position of music in the modern world" (p.vi).

The social and applied psychology of music, with a strong interest in how research can be applied to "real world" problems and issues, has developed to emphasize research using real music and real contexts (North & Hargreaves, 2008). Another emphasis pertains to defining the purpose of music in the modern world. Topics of interest to the social and applied psychology of music include the concept of creativity, identity, and music preference. Composing, performance, and listening feature strongly, but the applied nature is most evident when considering topics such as music censorship, music subcultures,

the use of music in business, the connection between music and health, and music education. Most importantly, research questions address people's relationship to music as it is experienced in an attempt to determine why music matters (North & Hargreaves, 2008).

The acknowledgement of context has also affected the methodologies employed in the field, with increased use of naturalistic settings. Furthermore, this shift and resultant perspective forms the foundation for the current exploration into how individuals use music in their daily lives. It means that the focus should be on real people (rather than student samples), real music (i.e., that which is listened to most commonly), and real contexts (rather than the laboratory). Focused listening (required, for example, in the concert hall) is not the only means of experiencing music—more often, music in everyday life is accompanied by the listener doing something else (Lehmann, Sloboda, & Woody, 2007), so that authenticity is a key consideration within the social and applied perspective. As noted at the beginning of this chapter, one key aspect of this authenticity is recognition of a technologically-dominated context to music listening.

1.4 Intertwining the Perspectives

The foundation of the current undertaking draws on social psychology, environmental psychology, and the social and applied psychology of music. It also rests on prior foundational work in numerous more specific topics from various other sub-disciplines of psychology. The important thread from all these approaches is the emphasis placed on the role of individuals, places, times, the music itself, and the means by which it is heard as all forming part of the experience of music. In order for research to bear likeness to the affairs of real life, the studies and corresponding methodologies reported here were developed with the underlying goal of authenticity. For example, while questionnaires and surveys are two established methods that were employed, so too were methods such as the Experience Sampling Method and Day Reconstruction Method, which creatively employ current and popular technology to maintain as much realism as possible within the study design.

Using a variety of methodologies and research designs allowed for the research to focus on the authentic and context-specific uses of music in daily life.

1.5 Rationale

Research based on a relativistic, real world approach drawing on methodology from the social and applied psychology of music, as well as social and environmental psychology, can provide explanations regarding music in our everyday lives. Such an interdisciplinary and relativistic framework takes into account the role that individuals, as active consumers, have in constructing their interactions with music within their environment. Further, this approach recognizes that the extent to which music is the focus of attention will vary between contexts and individuals, and that research designs should also incorporate digital listening technologies and their possible impact on listening practices.

To that end, the research reported here has been developed to examine three components of everyday listening, namely (a) how individuals access and select music to listen to; (b) the notion of choice/control over the music heard; and (c) the response to the music heard (e.g., mood responses and the perceived effects of the music). In particular, how individuals access and listen to music, with particular attention to the technologies involved, has not been previously undertaken. With the inclusion of this element, this research will make an original contribution to our understanding of how individuals use music in their daily lives.

1.6 Thesis Outline

The rest of the thesis is organized into three main sections, followed by a final discussion/conclusion.

Section 1 (chapters 2-6) situates how people interact with music in everyday life. Using the experience sampling method, Chapter 2 investigates how individuals encounter and select music in everyday life. Based on the implications of control and choice, the research presented in Chapters 3-5 was conducted to further investigate the concept of control/ choice related to everyday listening in particular. These studies are framed using Mehrabian and

Russell's (1974) theory of environmental psychology, which asserts that people's interactions and interpretation of their contextual surroundings result from variations in three factors (pleasure, arousal, and dominance) to everyday listening. As such, this research examines whether the dominance domain, as operationalized as control/ choice in terms of music listening, is a key feature in explaining everyday music listening.

While all of the chapters in Section 1 include an emphasis on considering the context of listening, Chapter 6 does so more broadly. In particular, this study considered the nature of any seasonal correlates of music taste as a macro-level influence, via examination of people's preferences for constructing music playlists.

The research presented in Section 2 considers how music is accessed in from a detailed psychological perspective. Chapter 7 considers the use of different listening devices and identity and Chapter 8 is concerned with selection methods. The research questions in these two chapters focus on whether demographic, technology use-related, and explicitly psychological variables can predict everyday listening practices.

In section three, the research studies presented in Chapters 9-11 examine music-related behaviors in the context of social network site usage. This research serves as a first step towards understanding online music fan practices from an explicitly psychological perspective. The study in Chapter 9 considers whether technology use and psychological variables could predict whether individuals interact with musicians on social networking sites, and opinions about doing so, while the research in Chapter 10 considers music behaviors on the popular social networking website, Facebook, in particular. Using the Uses and Gratifications perspective, Chapter 11 further explores the potential benefits from using Facebook applications as a way of listening to music.

In sum, the three sections of this thesis address the most notable aspects of music is experienced as a consequence of the digital revolution, namely [1] how music fits in with other contemporaneous activities; [2] how music is accessed and selected; and [3] a focus on music practices on social media. Chapter 12 concludes the thesis providing an integrated summary of the

conducted studies, an evaluation of contributions and limitations of the thesis, and directions for future research. The value of Mehrabian and Russell's PAD framework as well as other possibilities for potential developments are discussed.

Section One: Contextualizing Listening

The ubiquity of music in everyday life means that it is important to question how and why people experience it (Chamorro-Premuzic & Furnham, 2007). With developing technologies, people can now, to a greater degree than hitherto, use listening devices to control and expand upon how, when, and where they experience music (Heye & Lamont, 2010; Juslin et al., 2008; Sloboda et al., 2009). However, the present understanding of how people experience music in the context of today's technologically-mediated climate is limited. Thus, Section 1 presents a broad overview of everyday listening and then considers the role of control in shaping everyday listening.

Chapter 2: An Overview of Everyday Listening[1]

Significant portions of Chapter 2 are unable to be reproduced here due to copyright restrictions.

The material included in this chapter can instead be accessed via three published articles (doi:10.1177/0305735613496860; doi:10.1080/08838151.2014.906437; and doi:10.1037/ppm0000059).

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[1] *Note*. Significant portions of this chapter have been taken from two published journal articles and one manuscript currently under review (see Appendix A for copyright permissions and Appendix B for co-author contribution statements). Additionally, the results were presented at the 2012 International Conference on Music Perception and Cognition Conference in Thessaloniki, Greece.

Krause, A. E., North, A. C., & Hewitt, L. Y. (2013). Music-listening in everyday life: Devices and choice. *Psychology of Music*, Advance online publication. doi:10.1177/0305735613496860. The published version can be found at http://pom.sagepub.com/content/early/2013/08/13/0305735613496860.abstract

Krause, A. E., North, A. C., & Hewitt, L. Y. (2013). Music selection behaviors in everyday listening. *Journal of Broadcasting and Electronic Media, 58*, 2, 306-323. doi:10.1080/08838151.2014.906437. The published version can be found at http://www.tandfonline.com/doi/abs/10.1080/08838151.2014.906437#.U7IXWxaaE08

Krause, A. E., North, A. C., & Hewitt, L. Y. (2014). The role of location in everyday experiences of music. *Manuscript submitted for publication*.

Chapter 3: Contextualized Listening Via Playlists[2]

The previous chapter presented an overview of everyday music encounters, including where, when, and how music was experienced. While it covered a broad range of listening devices and selection behaviors, the present chapter focuses more narrowly on playlists as a means of contextualizing everyday listening.

The digitization of music has altered consumption practices (Avdeeff, 2012), particularly by allowing more interactivity (Kibby, 2009) so that listeners are no longer constrained by, for instance, albums and track orders (Molteni & Ordanini, 2003). Listening via playlists contrasts with listening to an album or via *shuffle* (i.e., a playback option that randomly orders the presentation of a set of songs - Cunningham, Bainbridge, & Falconer, 2006). Indeed, with an increasing amount of listening occurring via digital devices (Avdeeff, 2012; Leong & Wright, 2013), playlists represent a common method of listening to music (Komulainen et al., 2010; Krause, 2010).

Playlists may indicate listeners' attempts at mood regulation (Cunningham et al., 2006; Heye & Lamont, 2010), and appear to be the preferred playback option for listening that occurs while carrying out other activities (Kamalzadeh, Baur, & Möller, 2012). Leong and Gram (2011) go so far as to suggest that a new type of listening strategy has arisen from greater use of playlists, in which the listener regards music as a resource and actively uses a mobile device based on his/her needs: the music is regarded as an adjustable soundtrack that supports his/her identity, mood, activities, and surroundings. This supports DeNora's (2000) assertion that people are able to act as "personal DJs" who are aware of what music they need to hear in different situations and at different times, and who define that "right" music in part by how it fits the purpose or situation. In the modern era, then, the playlist is an

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[2] *Note*. The material used in this chapter also appears in a manuscript submitted for publication, currently under review. A co-author statement is located in Appendix B.

Krause, A. E., & North, A. C. (2014). In situ music playlists. *Manuscript submitted for publication*.

appropriate unit of analysis to use in researching everyday music listening.

3.1 Everyday Listening

While it is known that everyday music listening takes place in varying contexts, and that people use music to accompany varying activities (Chapter 2; North et al., 2004; Sloboda& Juslin, 2010), there is a lack of research concerning the factors that influence contextual listening choices (Kamalzadeh et al., 2012). The determinants of everyday listening remain the subject of little research, and there is similarly poor theoretical understanding.

Prior research concerning music preference has adopted the approach of experimental aesthetics. As discussed in Chapter 1, much of this has concerned the putative inverted-U relationship between the degree of pleasure and arousal evoked by music (Kellaris, 1992; North & Hargraves, 1997; North & Hargreaves, 1996b). Berlyne's (1971) theory argues that there is an inverted-U between liking for music and the degree of arousal it evokes, so that moderately arousing music is liked most. While laboratory research has frequently (although not always) confirmed this inverted-U relationship, the concern of the present research is whether it holds within everyday listening situations (North & Hargreaves, 2008), which themselves may impose polarized levels of arousal or otherwise be subject to more socially-defined norms for music listening. North and Hargreaves (2000) found that individuals preferred "high-arousal music" during aerobic exercise activity but "low-arousal music" during guided relaxation, such that music selections reflected an arousal-polarization rather than -moderation strategy. However, when stating preferences *after* relaxing or exercising, participants' music preferences suggested attempts at moderating their arousal levels (North & Hargreaves, 2000). Further evidence that the predictions of Berlyne's theory are not confirmed in naturalistic settings is provided by North and Hargreaves (1996c) who found that preferred musical characteristics for a situation were those that augmented the affective qualities of the situation: highly arousing situations, such as exercising, were associated with descriptors that implied increased arousal; whereas situations representing a low degree of arousal, such before going to bed, were associated with descriptors that would reduce arousal levels. Thus, preferred music would have further polarized participants' degree of arousal, rather than moderating it. It is

likely that different arousal states may be considered appropriate for different situations (Hargreaves & North, 2010), such that preference, and the role of arousal in this, cannot be considered independently of the listening situation. Indeed, research considering playlist construction specifically has indicated that individuals consider mood, genre, rhythmic quality, volume, composition, and tempo (among other characteristics) when creating and managing playlists (Kamalzadeh et al., 2012; Stumpf & Muscroft, 2011) and that context is included as an element of a "good" playlist (Fields & Lamere, 2010).

Moreover, the research presented in Chapter 2, which considered devices and selection choices related to everyday listening, goes further than the earlier work on appropriateness by indicating that control and choice concerning the music in question are themselves important contextual factors. Using music listening devices that allow for personal input, such as mobile mp3 players, was associated with more positive moods and consequences than were devices that do not permit such control, suggesting that dominance may be crucial in one's response to music encountered during everyday life. Berlyne's theory cannot account simply for the role of music in allowing some degree of control over the listening environment. However, one similar approach that can is Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance (PAD) framework (discussed in Chapter 1).

In terms of the PAD domains, pleasure increases approach behaviors, and any aspect of the environment may generate pleasant stimulation and cause approach, including the individual or learned associations between the environment and other pleasure-inducing factors (Mehrabian & Russell, 1974). For instance, a person enjoying the company of friend will likely find the situation more pleasing due to the pleasant companionship even though that companion is not an inherent aspect of the particular environment. Arousal level also mediates approach-avoidance behaviors (Donovan & Rossiter, 1982; Hines & Mehrabian, 1979; Mehrabian & Russell, 1974). Extremely high or low levels of arousal are avoided while environments of moderate arousal levels best encourage approach behaviors. As with pleasure, arousal is determined both by the individual and the environment (Mehrabian & Russell, 1974). Mehrabian and Russell (1974) were uncertain as to how dominance related to approach-avoidance behaviors, due to a lack of evidence. In fact, much of the research has ignored dominance altogether, such that its

influence on approach and avoidance behaviors remains uncertain. However, Yani-de-Soriano and Foxall (2006) critically assessed the inconsistent research concerning dominance and concluded that it is a "valid emotional dimension and, as such, is an integral part of the measurement of the emotion-eliciting qualities of environments and mediates approach–avoidance behavior" (p. 411).

This framework offers a promising means of exploring individuals' daily music interactions because the pleasure and arousal dimensions can accommodate (at least to some extent) earlier findings within experimental aesthetics, but the additional dimension of dominance means that it can also account for more contemporary evidence concerning the individual's control over and interactions with his or her context.

The aim of this research is to investigate those factors underlying music listening in different situations. Firstly, as everyday listening situations vary, it seems appropriate to attempt to characterize these differences in terms of Mehrabian and Russell's PAD framework. It similarly seems appropriate to attempt to address responses to these situations in terms of those theories outlined above. Specifically, as Berlyne's theory attempts to explain all aesthetic responses, we might expect to find an inverted-U relationship between ratings of pleasure and arousal assigned to the listening situation itself. Similarly, given the arguments above concerning the importance of choice, we might expect to find a positive relationship between ratings of pleasure and dominance assigned to the listening situations. As such, this leads to three preliminary hypotheses, as follows:

H1: Everyday music listening situations will be differentiated in terms of pleasure, arousal, and dominance, such that different situations can be classified as "high" and "low" in terms of pleasure, arousal, and dominance.

H2: There will be an inverted-U relationship between ratings of pleasure and arousal assigned to the situations.

H3: There will be a positive relationship between the pleasure and dominance ratings assigned to the situations.

Assuming that differences between the listening situations do exist on the PAD dimensions, then we might therefore expect the music selected for those situations to vary accordingly. On the basis of previous evidence concerning

preference and arousal, we expect that musical choices may differ for specific situations on the basis of arousal-based goals therein. If listeners are in a situation that requires high arousal, such as exercising, they should wish to hear with descriptors that would increase arousal (such as loud and rhythmic); whereas situations in which a low degree of arousal is desirable, such as before going to bed, should be associated with a wish to hear music with descriptors that would reduce arousal levels (such as quiet and relaxing). This difference in arousal should also be reflected structurally in the beats per minute (BPM) of the music. BPM is an index of arousal apparent to the listener and easily quantified. Thus, the mean BPM of the music selected to accompany jogging should be significantly higher than the mean BPM for music selected for listening to before going to sleep.

However, factors other than arousal may be salient also. In particular, playlist construction has been shown to be based on a number of features, including context (Kamalzadeh et al., 2012; Stumpf & Muscroft, 2011). North and Hargreaves (1996c) found that preferred music for a situation often appears to reflect the affective qualities of the situation in a manner that simply could not be accounted for in terms of arousal, and which instead appeared to relate to cognitive judgments regarding the perceived function or appropriateness of the music. For instance, music selected for a romantic dinner might be characterized as being sensual; music for a cocktail party might be characterized as sophisticated; and music selected before sleep might be characterized as beautiful.

Additionally, the music experienced in some situations/contexts might be subject to strong injunctive norms both in terms of the degree of choice and control that the individual has over whether music can be heard at all and over the specific nature of any music present therein. For example, in most western ceremonies, attendance at a wedding involves a lack of choice and control over whether music can be heard at all, and over the specific nature of the music to which one is exposed. In contrast, when driving a car one has considerable volition over whether music is played at all and if so over the nature of that music. This argument suggests that, in addition to finding variation between situations in terms of dominance ratings, we might also find that injunctive norm differences mean that some situations give rise to similar musical experiences across individuals whereas other situations are associated with individuals listening to very different music selected

on far more idiosyncratic bases. Therefore, we expect to find greater similarity between people's playlists in situations that are subject to stronger injunctive norms and less similarity in people's playlists in situations that are subject to weaker injunctive norms.

This leads to five further hypotheses, as follows:

H4: Preferred music for "high arousal" situations will be characterized by descriptors that imply increased arousal, whereas music preferred for "low arousal" situations will be associated with descriptors that would reduce arousal levels.

H5: The BPM of the music selected to accompany "high arousal" situations will be significantly higher than the BPM of music selected for "low arousal" situations.

H6: The preferred music for a situation will be characterized in terms of adjectives that reflect the context in which it is to be experienced.

H7: There will be differences between situations in ratings of how similar individuals believe their playlist to be to those playlists made by other people for the same situation.

3.2 Applying the PAD Model to Everyday Situations

A pilot study was carried out in order to characterize the situations addressed by the present research. Four hundred participants (50 per situation) independently completed Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance measure for one of the eight situations. The eight situations included four selected as likely involving high or low levels of arousal, and also four situations likely subject to high or low injunctive norms concerning music (which refers to the degree that the situation suggests/commands certain music be listened to by the individual). The eight situations (adapted from North & Hargreaves, 1996c) were a house party with friends (putatively high arousal), jogging with an mp3 player (putatively high arousal), before going to sleep (putatively low arousal), after a long day of work (putatively low arousal), a wedding (putatively strong injunctive norm), a posh cocktail reception (putatively strong injunctive norm), doing the washing up/ ironing (putatively low injunctive norm), and commuting on public transportation (putatively low injunctive norm). The PAD measure presents participants with 18

items (six per dimension), presented as bipolar adjective pairs on seven-point Likert scales, for which they are asked to indicate how they feel in the given situation. Cronbach's alpha for the pleasure, arousal, and dominance dimensions was .89, .88, and .86 respectively. Mean pleasure, arousal, and dominance scores were then calculated for each situation.

Pleasure, arousal, and dominance scores across the situations were analyzed with three separate maximum likelihood mixed effects linear regression models as implemented through SPSS's Generalized Linear Mixed Models (GLMM; $\alpha = .017$). GLMM represents a special class of regression model, which allows both random and fixed effects to be modeled; and can model outcome variables with non-normal distributions.

The analyses concerning pleasure and arousal were significant: pleasure F (7, 387) = 15.08, $p < .001$, $\eta_p^2 = .214$; arousal F (7, 384) = 16.08, $p < .001$, $\eta_p^2 = .225$. The analysis regarding dominance was of borderline significance, F (7, 387) = 2.47, p = .017, $\eta_p^2 = .035$. Deviation contrasts, which compared each situation's mean to the overall mean, were examined to identify those situations that gave rise to significantly higher or lower scores across the different situations. As such, this analysis identified "high" and "low" situations in terms of each of pleasure, arousal and dominance. These results, confirming Hypothesis 1, are presented in Tables 3.1 and 3.2, and demonstrate that the PAD dimensions are able to distinguish meaningfully between the situations.

Table 3.1.

Mean Pleasure, Arousal, and Dominance values for the Eight Situations

	Pleasure			Arousal			Dominance		
Situation	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
Posh cocktail reception	2.72	0.14	[2.45, 2.99]	3.60	0.16	[3.29, 3.90]	3.47	0.15	[3.18, 3.77]
House party	2.25	0.13	[2.00, 2.50]	3.12	0.13	[2.87, 3.38]	3.72	0.13	[3.46, 3.98]
After a long day	3.14	0.12	[2.89, 3.38]	4.23	0.20	[3.83, 4.63]	3.64	0.16	[3.34, 3.95]
While doing the washing up/ ironing	3.63	0.19	[3.26, 4.00]	4.51	0.18	[4.16, 4.87]	3.56	0.14	[3.29, 3.83]
At a wedding	2.09	0.12	[1.86, 2.32]	3.09	0.17	[2.76, 3.42]	3.90	0.19	[3.52, 4.27]
Before going to sleep	2.35	0.11	[2.13, 2.57]	4.43	0.21	[4.03, 4.84]	3.90	0.17	[3.57, 4.23]
While commuting on public transportation	3.54	0.17	[3.21, 3.87]	4.69	0.18	[4.33, 5.06]	4.07	0.17	[3.73, 4.41]
While jogging with an mp3 player	2.90	0.16	[2.59, 3.22]	3.15	0.16	[2.84, 3.46]	3.34	0.13	[3.07, 3.60]

Note. N = 400 (50 per situation); *SE* = Standard error; *CI* = Confidence interval.

Table 3.2.

Deviation Contrast Results from the GLMM Analyses Regarding the Eight Situations' Average Pleasure, Arousal, and Dominance Values

	Pleasure				Arousal				Dominance			
Deviation Contrasts	*t*		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
Posh cocktail reception - mean	-0.79		[-0.36, 0.15]	.002	-1.74		[-0.55, 0.03]	.008	-1.60		[-0.50, 0.05]	.007
House party - mean	-4.68	***	[-0.82, -0.34]	.054	-5.63	***	[-0.99, -0.48]	.076	0.13		[-0.23, 0.27]	.000
After a long day - mean	2.73	**	[0.09, 0.53]	.019	2.04	*	[0.01, 0.74]	.011	-0.40		[-0.34, 0.23]	.000
While doing the washing up/ ironing - mean	4.73	***	[0.47, 1.14]	.055	3.92	***	[0.33, 0.99]	.038	-1.04		[-0.40, 0.12]	.003
At a wedding - mean	-6.49	***	[-0.96, -0.52]	.098	-4.80	***	[-0.07, -0.45]	.057	1.14		[-0.15, 0.54]	.003
Before going to sleep - mean	-4.34	***	[-0.70, -0.26]	.046	3.05	**	[0.21, 0.95]	.024	1.31		[-0.10, 0.51]	.004
While commuting on public transportation - mean	4.83	***	[0.42, 1.00]	.057	4.94	***	[0.51, 1.17]	.060	2.31	*	[0.06, 0.68]	.014
While jogging with an mp3 player - mean	0.50		[-0.22, 0.37]	.001	-4.71	***	[-1.00, -0.41]	.055	-2.82	**	[-0.62, -0.11]	.020

Note. DF = 387 for Pleasure and Dominance, and 384 for Arousal; * $p < .05$, ** $p < .01$, *** $p < .001$.

A house party, at a wedding, and before going to sleep were the three situations for which the means were significantly more pleasurable than the overall mean pleasure rating, so that they can be regarded as "high pleasure" situations. In contrast, doing the washing up/ironing, after a long day, and commuting on public transportation were situations significantly less pleasurable than the overall mean, indicating that they can be regarded as "low pleasure" situations. Situations with significantly higher arousal ratings than the overall mean were a house party with friends, jogging with an mp3 player, and at a wedding. These, therefore, can be regarded as "high arousal" situations. In contrast, after a long day, doing the washing up/ironing, before going to sleep, and commuting on public transportation were situations that were significantly less arousing than the overall mean, indicating that they can be regarded as "low arousal" situations. Participants rated jogging with an mp3 player as significantly more dominant than other situations on average, while the mean for commuting on public transportation was significantly lower than the overall mean. This pattern indicates that jogging can be regarded as a high dominance situation and commuting can be regarded as a low dominance situation.

To address H2, a GLMM analysis tested for a relationship between arousal (entered as the predictor variable) and pleasure (entered as the outcome). The responses to the arousal items on the Mehrabian and Russell measure (rated as 1-7) were recoded as -3 to +3 respectively, the mean was then calculated, and then the negative sign was removed. Thus, by removing the negative sign, high values represent ratings towards the poles of the scale, so that a negative relationship is indicative of a real-terms inverted-U relationship. The result was non-significant (β = -0.07 [-0.25, 0.11], t (386) = -0.79, p = .431, η^2 = .002). Therefore, there was no evidence of an inverted-U relationship between ratings of pleasure and arousal.

To address H3, a GLMM analysis was carried out in which pleasure was entered as the predictor variable and dominance as the outcome variable. As predicted, the results demonstrated a statistically significant positive relationship (β = 0.31 [0.20, 0.42], t (388) = 5.75, p = .452, η^2 = .079), indicating that feeling in control is related to feelings of pleasure.

3.3 Method

3.3.1 Participants.

While 468 individuals completed a portion of the questionnaire, data analysis was performed using the responses from the 344 participants (73.50% of total; 43 participants per situation) who nominated 10-12 pieces of music as requested. Of these 344 individuals, 207 (61.10%) were female. Participant ages ranged from 16-64 years (M = 24.26, Mdn = 22, SD = 7.48). Three independent judges rated the participants' degree of music education and training, and sorted these into "low" (52.5% of respondents), "moderate" (34.6%) or "high" (12.8%) groups respectively. (The intra-class correlation coefficient for the rater agreement was .91.) Tables 3.3 and 3.4 present means, medians, standard deviations, and correlations concerning the participants' age, sex, ratings of the importance of music to them (see below), music education level, average number of hours spent listening to music daily, and ratings of how often they made and listen to playlists (see below).

Participants were recruited via advertisements placed around a university campus as well as via social media, online research listings, and the author's website. All participants were required to have access to a personal music collection (in any media format) and to be familiar with playlist creation. Participation was voluntary, and some university students received course credit for their participation through the host University's research participation program.

Table 3.3.

Summary of Intercorrelations, Means, Medians, and Standard Deviations for the Background Characteristics of the Sample

		Age	Music importance rating	Daily listening amount (hours)	Music education level	How often do you make playlists?	How often do you listen to playlists?
Age	τ		-.03	-.10*	.04	-.06	-.04
	N		342	343	343	337	339
Music	τ			.32***	.19***	.21***	.05

importance rating	N			342	341	335	337
Daily listening amount (hours)	τ				.06	.16***	.07
	N				342	336	338
Music education level	τ					.01	-.05
	N					336	338
How often do you make playlists?	τ						.52***
	N						337
	M	24.26	6.04	4.44		4.15	4.4
	Mdn	22	6	3.5	1	4	5
	SD	7.48	1.06	3.36		1.78	1.87
	N	344	342	343	343	337	339

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.4.

Mann-Whitney U Results of Sample Characteristics by Gender

	Age	Music importance rating	Daily listening amount (hours)	Music education level	How often do you make playlists?	How often do you listen to playlists?
Female mean rank	156.12	163.04	169.14	168.49	173.72	182.07
Male mean rank	191.77	178.37	170.06	171.1	154.85	144.05

Mann-Whitney U	10788	12266	13485	13348.5	11537.5	10182
z	-3.28	-1.50	-0.09	-0.27	-1.77	-3.55
Significance	.001	.134	.933	.790	.077	< .001
N	339	337	338	338	332	334
Effect size	-0.18	-0.08	.00	-0.01	-0.10	-0.19

3.3.2 Materials.

3.3.2.1 Background information. Participants reported their age and sex, and answered three questions about their degree of engagement with music. The latter involved answering an open-ended question about their level of music education and experience, reporting the number of hours they listened to music on average daily, and rating how important they considered music to be in their life on a seven-point scale (1 = *not at all* to 7 = *extremely*).

3.3.2.2 Playlist creation. One of the eight hypothetical music listening situations was randomly presented to the participants, who were then asked to nominate a playlist of 10-12 songs to listen to therein (stating the full title and artist for each song). The same eight situations were investigated, namely a house party with friends, jogging with an mp3 player, before going to sleep, after a long day of work, a wedding a posh cocktail reception, doing the washing up/ ironing, and commuting on public transportation.

3.3.2.3 Playlist questions. Using seven-point scales (1 = *not at all*, 7 = *extremely*), individuals rated the extent to which each of 24 music descriptors characterized the music chosen for the situation in question. These descriptors (taken from North & Hargreaves, 1996c) were familiar, sad, strong rhythm, attention-grabbing, can dance vigorously to it, happy, sensual, lilting, beautiful, natural/fresh, expresses profound emotions, sentimental, nostalgic, sophisticated/classy, exotic, quiet, loud, romantic, moody, inspiring/majestic, relaxing/peaceful, invigorating, exciting/festive, and strong ethnic roots.

Participants also rated how similar they believed their playlist would be to that produced by other people for the same situation (hereafter referred to as the "playlist similarity rating") and to what degree they considered their choices to be

defined by prevailing musical norms for the specific situation (henceforth, "constrained choice rating") on seven-point Likert scales (1 = *unique/ original*, 7 = *the same*; and 1 = *not at all*, 7 = *completely*, respectively). Lastly, participants made two ratings indicating how often they made playlists and listened to music via playlist, using seven-point scales (1 = *never* and 7= *a lot*) for each.

3.3.3 Procedure.

After reading the participant information and consent form, individuals answered the questions about themselves, nominated their playlist for the situation in question, and then answered the playlist questions.

3.4 Results and Discussion

3.4.1 Music descriptors.

Hypotheses 4 and 6 predicted respectively that preferred music would be characterized by arousal level and in terms of adjectives reflecting the context in which it is to be experienced. To test this, participants' ratings of the 24 musical descriptors were first subjected to factor analysis. Varimax rotation of the principal components solution produced two factors that accounted for 42.44% of the total variance (see Table 3.5). The two factors were labeled arousing (Cronbach's alpha = .91) and sophisticated (Cronbach's alpha = .83) respectively, and appear consistent with previous findings by North and Hargreaves (1996c).

Table 3.5.

Item Loadings from the Varimax Rotation Principal Components Factor Analysis on the 24 Musical Descriptor Ratings

	Factor	
Item	1: Arousing	2: Sophisticated
Loud	0.82	
Invigorating	0.81	
Attention-Grabbing	0.81	

Strong Rhythm	0.79	
Can dance vigorously to it	0.79	
Exciting/Festive	0.77	
Relaxing/Peaceful	-0.64	
Quiet	-0.74	
Sophisticated/Classy		0.75
Natural/Fresh		0.71
Sensual		0.64
Beautiful		0.64
Lilting		0.63
Exotic		0.61
Inspiring/Majestic		0.59
Romantic		0.56
Strong Ethnic Roots		0.52
Moody		
Sad		
Expresses profound emotions		
Happy		
Nostalgic		
Sentimental		
Familiar		
Rotation Sums of Squared Loadings	5.61	4.57
% of Variance	23.38	19.06

Note. Loadings < .47 are suppressed.

Two separate GLMM analyses ($\alpha = .025$) considered whether scores on the two factors respectively varied by situation. In these analyses, each music descriptor factor was entered separately as the dependent variable, while situation was the fixed factor (with eight levels). The two analyses were significant: arousing F (7, 244) = 21.68, $p < .001$, $\eta_p^2 = .383$; and sophisticated F (7, 244) = 9.07, $p < .001$, $\eta_p^2 = .206$.

Deviation contrasts were examined to identify which situations gave rise to scores that differed from the overall mean. Results are presented in Tables 3.6 and 3.7.

Table 3.6.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analyses Concerning the Two Musical Descriptor Factors, the Playlist Average BPM, and the Playlist Similarity Rating

	Factor 1: arousing [a]			Factor 2: sophisticated [a]			BPM mean [b]			Similar list rating [c]		
Situation	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
Posh cocktail reception	-0.38	0.15	[-0.68, -0.08]	0.58	0.16	[0.26, 0.90]	118.78	1.92	[115.01, 122.55]	2.35	0.19	[1.97, 2.73]
House party	0.48	0.14	[0.20, 0.76]	-0.45	0.21	[-0.86, -0.04]	124.88	1.45	[122.02, 127.74]	3.70	0.24	[3.23, 4.16]
After a long day	-0.17	0.16	[-0.48, 0.14]	-0.38	0.15	[-0.67, -0.08]	117.86	2.02	[113.89, 121.83]	3.18	0.23	[2.73, 3.63]
While doing the washing up/ ironing	0.25	0.12	[0.01, 0.49]	0.04	0.14	[-0.24, 0.32]	121.62	1.73	[118.21, 125.03]	3.14	0.22	[2.71, 3.57]
At a wedding	0.05	0.16	[-0.27, 0.36]	0.78	0.18	[0.44, 1.13]	112.21	1.86	[108.54, 115.87]	3.28	0.23	[2.83, 3.73]
Before going to sleep	-1.33	0.15	[-1.63, -1.03]	0.25	0.16	[-0.07, 0.56]	108.26	2.12	[104.08, 122.44]	3.51	0.21	[3.10, 3.93]
While commuting on public transportation	0.14	0.13	[-0.11, 0.40]	-0.46	0.13	[-0.72, -0.20]	122.22	2.03	[118.22, 126.22]	2.92	0.20	[2.53, 3.31]
While jogging with an mp3 player	0.87	0.12	[0.63, 1.11]	-0.33	0.14	[-0.60, -0.07]	129.40	2.25	[124.81, 133.81]	3.27	0.27	[2.74, 3.80]

[a] N = 252.

[b] N = 344.

[c] N = 326.

Note. *SE* = standard error; *CI* = confidence interval.

Table 3.7.

Deviation Contrast Results from the GLMM Analyses Regarding the GLMM Analyses Addressing the Two Musical Descriptor Factors, Playlist Average BPM, Playlist Similarity Ratings, and the Situation Dependent Ratings

	Factor 1: arousing [a]				Factor 2: sophisticated [a]				BPM mean [b]				Similarity rating [c]			
Pairwise Contrasts	*t*		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
Posh cocktail reception - mean	-2.62	**	[-0.65, -0.09]	.027	3.78	***	[0.28, 0.88]	.055	-0.35		[-4.16, 2.91]	.000	-4.46	***	[-1.18, -0.46]	.059
House party - mean	3.69	***	[0.23, 0.76]	.053	-2.38	*	[-0.82, -0.08]	.023	3.82	***	[2.66, 8.30]	.042	2.42	*	[0.10, 0.96]	.018
After a long day - mean	-1.08		[-0.45, 0.13]	.005	-2.68	**	[-0.66, -0.10]	.029	-0.82		[-5.24, 2.15]	.002	0.03		[-0.41, 0.43]	.000
While doing the washing up/ ironing - mean	2.20	*	[0.03, 0.49]	.019	0.27		[-0.23, 0.30]	.000	1.34		[-1.03, 5.47]	.005	-0.14		[-0.43, 0.43]	.000
At a wedding - mean	0.39		[-0.23, 0.35]	.001	4.80	***	[0.46, 1.10]	.086	-4.10	***	[-10.65, -3.75]	.048	0.52		[-0.31, 0.53]	.001
Before going to sleep - mean	-9.38	***	[-1.60, -1.04]	.265	1.61		[-0.05, 0.54]	.011	-5.68	***	[-15.00, -7.28]	.087	1.72		[-0.05, 0.74]	.009
While commuting on public transportation - mean	1.26		[-0.09, 0.40]	.006	-3.64	***	[-0.72, -0.21]	.052	1.49		[-0.90, 6.53]	.007	-1.31		[-0.62, 0.13]	.005
While jogging with an mp3 player - mean	7.64	***	[0.66, 1.11]	.193	-2.60	*	[-0.59, -0.08]	.027	4.85	***	[5.94, 14.05]	.065	0.43		[-0.38, 0.59]	.001

[a] DF = 244.

[b] DF = 336.

[c] DF = 318.

Note. *SE* = standard error; *CI* = confidence interval.

* $p < .05$, ** $p < .01$, *** $p < .001$.

As per H4, preferred music was characterized in part on the basis of arousal goals. Preferred music for two high arousal situations, jogging with an mp3 player and a house party, was rated as significantly more arousing than for the overall average. In contrast, preferred music for before going to sleep (one of the low arousal situations) and at a posh cocktail reception was significantly less arousing than the overall average across all the situations. Therefore, the results appear to support the hypothesis and prior research regarding the selection of music based on an attempt to achieve a desired state of arousal (e.g., North & Hargreaves, 2000).

H6 predicted that preferred music for a given situation could also be characterized in terms of the perceived function of the music or in terms of a judgment of appropriateness. The existence of the sophisticated dimension underlying ratings of the 24 musical descriptors appears to confirm this. More specifically, the significant deviation contrasts demonstrate that this descriptor was significantly more important for the music experienced at a wedding and at a cocktail party. On the other hand, music after a long day, while commuting on public transport, during a house party, and while jogging is significantly less likely to be described as sophisticated when compared to the average across the situations.

These findings also have broader theoretical implications. Although North and Hargreaves (1996c) argued that the perceived appropriateness of music is an important predictor of in situ musical preferences, the two factors discussed here, arousing and sophisticated, appear to represent the dimensions along which music can be characterized as "appropriate" for a situation. Moreover, the utility of the pleasure, arousal, and dominance dimensions in explaining the present results implies that Mehrabian and Russell's framework may be a useful means of considering the relationship between the listening situation and musical preference.

3.4.2 Beats Per Minute (BPM).

BPM was used as an objective measure of arousal for each piece of music nominated by participants. Nominations that did not state the artist/group were removed from the dataset (including, for example, classical submissions without a performer) as were works with multiple movements, as an accurate, single representative BPM could not be determined. Further, music that was not available

in the iTunes and Amazon online catalogues was removed from the data set. Beat Monitor (a real-time BPM analyzer program available for purchase from the iTunes App Store) analyzed the BPM of each song using the online preview sound clip from the iTunes or Amazon online catalogues. As this program restricted analysis within a 91-180 BPM range, the operation of the program was monitored to identify any nominated pieces that fell outside this range so that they could be analyzed manually. A second, independent reviewer verified the BPM rating for the songs that were potentially misreported due to a BPM outside of this range (291 entries, or 7.64% of all nominated songs). Using the individual song BPMs, the overall playlist BPM mean was calculated for each participant's playlist.

A GLMM analysis ($\alpha = .05$) was conducted to examine whether each participant's mean BPM (entered as the dependent variable) differed by situation (entered as the fixed factor). As indicated in Table 3.5, the overall model was significant, $F\,(7, 336) = 11.47$, $p < .001$, $\eta_p^2 = .193$; and deviation contrasts indicated a pattern of significant differences (see Tables 3.6 and 3.7). Similar to the results arising from participants' ratings of the music descriptors, a house party and jogging were situations for which mean BPM results were significantly higher than the average across all situations. In contrast, the mean BPM was significantly lower for the playlists created for use before going to sleep and at a wedding. Confirming the hypothesized pattern (H5), the results indicated that high arousal situations are associated with arousing music and slower, calming music was associated with low arousal situations. In conjunction with the ratings of the musical descriptors, this supports the notion that participants were apparently choosing music to polarize their degree of arousal to a level that is consistent with the goals of the listening situation, rather than attempting to moderate their level of arousal.

3.4.3 Injunctive Norms

H7 predicted that ratings for playlist similarity would differ because situations are subject to injunctive norms. A GLMM analysis ($\alpha = .05$) examined the playlist similarity ratings (entered as the dependent variable) in terms of the situation (the fixed factor). This analysis was significant: $F\,(7, 318) = 3.93$, $p < .001$, $\eta_p^2 = 0.08$; and deviation contrasts were used to investigate the differences between situations (see Tables 3.6 and 3.7). The results indicate that playlist similarity for a

house party was significantly higher than the average rating. In contrast, playlists created for a cocktail reception were rated as significantly less likely to be similar to those playlists created by other people. This suggests that the strength of the injunctive norms associated with certain situations could be shaping listening choices.

3.5 Conclusion

In this study, everyday music listening was considered in the context of eight different situations. Firstly, these everyday situations differed in terms of ratings of pleasure, arousal, and dominance, so that they can be classified as high or low on the three domains. Subsequent analyses considered differences between the music selected (as playlists) for these eight situations. Music choices for the situations were characterized along two dimensions, namely arousing and sophisticated, and differences between the arousing and sophisticated scores concerning the music were related to variations between the situations in terms of their pleasure, arousal, and dominance. The results concerning arousal support the argument that in situ music selection appears to follow an arousal-optimization strategy. Characterizing the preferred music using the sophisticated dimension also reflects the pattern of findings for situations in terms of high and low pleasure. The findings also suggest that music chosen for situations is subject to injunctive norms. For instance, while there was considerable variation between participants in the music chosen for listening to while on public transport or when washing dishes, music selected for a wedding was much more homogenous. More generally, the results indicate that Mehrabian and Russell's PAD dimensions offer a useful framework for considering the relationship between music and the environmental context in which it is experienced.

These findings indicate that the extent to which a person has control over the music they hear is an important variable, but also raises a question for discussion, namely how best to conceptualize this notion of dominance. The present findings indicate that attempts to use music to achieve a certain degree of arousal are one component of dominance, but also that there are other injunctive norms that also influence the choice of music to be heard in a particular context. To some extent, it is possible that music becomes an injunctive norm for the situation in question

because it brings about a certain level of arousal, but also seems likely that numerous other cognitive factors also inform the process by which injunctive musical norms are formed.

Clearly, further work is needed to better specify the concept of control in everyday listening and the application of Mehrabian and Russell's PAD model. Thus, the research presented in Chapters 4 and 5 also make explicit use of Mehrabian and Russell's PAD model to continue to investigate everyday listening.

Chapter 4: In Situ Responses to Music[3]

Technological developments have altered how individuals listen to music. Chapter 2 outlined listening patterns regarding different listening devices and selection behaviors. As a result of the increasing range of means by which people are able to listen to music, it is important to consider the level of choice and control a person has over the music that he or she experiences in situ. The present research attempts this in the context of Mehrabian and Russell's (1974) model of environmental psychology (discussed in Chapter 1).

Following earlier research using the Experience Sampling Method (Czikszentmihalyi & Lefevre, 1989; Chapter 2; Sloboda et al., 2001), the present work employs the Day Reconstruction Method (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). Developed to mirror experience sampling (by attempting to capture a participant's daily experience), the Day Reconstruction Method asks participants to reconstruct their previous day as a series of episodes via a structured questionnaire, thereby providing an assessment of the entire day (Kahneman et al., 2004). In capturing the day from beginning to end, it offers an improvement over the Experience Sampling Method, which collects data at only one specific point in time (Kahneman et al., 2004). Thus, the systematic reconstruction makes it well suited to explore everyday music listening.

4.1 Literature Review and Hypotheses

Firstly, the present study addresses three hypotheses regarding the relationship between pleasure, arousal, and dominance drawn from Mehrabian and

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[3] *Note*. The material used in this chapter also appears in a manuscript submitted for publication, currently under review (a co-author statement is located in Appendix B). Additionally this research study was presented as a poster at the 2013 Australian Music and Psychology Society Conference in Melbourne, Australia.

Krause, A. E., & North, A. C. (2014). Pleasure, arousal, dominance, and in situ responses to music. *Manuscript submitted for publication*.

Russell's (1974) and Berlyne's (1971) theories. These hypotheses can be considered in terms of the environment itself in which listening occurs and the person's response to the music. Regarding the response to the music, pleasure, arousal, dominance are operationalized as how much a person likes the music heard, how arousing the person considers the music to be, and how much choice a person has in listening to the music. A fourth response question, namely how engaged a person is with the music (phrased as how central the music was to the activity), was included in order to operationalize Mehrabian and Russell's approach behaviors in a musical context.

H1a: As per Berlyne's findings concerning other stimuli, there should be an inverted-U relationship between pleasure and arousal ratings assigned to the listening situation.

H1b: There should be an inverted-U relationship between liking and arousal ratings assigned to the music experienced.

H2a: There should be a positive relationship between pleasure and dominance ratings assigned to the listening situation.

H2b: There should be a positive relationship between liking and choice ratings assigned to the music experienced.

H3a: There will be a positive relationship between pleasure ratings assigned to the listening situation and ratings of engagement with the music experienced therein (i.e., musical approach behavior).

H3b: There will be an inverted-U relationship between ratings of arousal evoked by the listening context and ratings of engagement with the music.

H3c: There will be a positive relationship between ratings of dominance assigned to the situation and ratings of engagement with the music.

H3d: There will be a positive relationship between liking for the music and ratings of engagement with that music.

H3e: There will be an inverted-U relationship between ratings of arousal regarding the music and ratings of engagement with the music.

H3f: There will be a positive relationship between ratings of choice assigned to the music and ratings of engagement with the music.

Secondly, previous research indicates that there are many elements that might contribute to whether or not music is experienced in any particular situation, as well as a person's response to any such music. These elements relate to the situation (such as the location and activity in which the person is involved) as well as to the individual in question (such as his or her musical identity, level of music education, and general level of engagement with music). As such, this raises several questions such as, what particular features are significant predictors of whether music is present in a given situation? What factors determine a person's response to the music, in terms of how much they like the music, consider it to be arousing, perceive that they have choice over the music, and are engaged with the music? Also, why might having control over music listening be important in everyday contexts and what aspects of the listener and situation are related to the importance of having control over music listening? Lastly, is dominance more important than the other predictor variables in terms of the presence of music, how a person responds to the music, and the importance of having control over music listening? While everyday listening is complex, and no single variable will provide a full explanation, on the basis of prior research and theory, it is possible to formulate a set of hypotheses in response to these questions.

Previous research indicates that demographic characteristics of listeners, the extent to which their identity is based on music, and their degree of engagement with music are all potentially relevant features pertaining to the individual. Relevant research regarding the role of demographic variables was described in Chapter 2 (see section 2.2.1). Additionally, North and Davidson (2013) considered global differences in the uses of music and music tastes, finding an interaction between region, education, and employment status. Thus, where a person resides may potentially influence the presence of music in everyday situations.

H4: Age and sex will be significant predictors of the presence of music during everyday episodes.

H5: Country of residence will be a significant predictor of the presence of music during everyday episodes.

Additionally, as discussed in Chapter 2, prior research has indicated that people's level of engagement with music plays a role in how often they participate in music-related activities (Greasley & Lamont, 2006). More engaged individuals are more conscious of their use of music, for instance, in efforts to change their mood (Greasley & Lamont, 2006). Moreover, results from the research using the Experience Sampling Method presented in Chapter 2 demonstrated that individuals who rated music as more important in their life experience a greater quantity of music (Chapter 2, section 2.4.2). Music is also a means of defining one's identity, both in terms of performing and listening (MacDonald, Hargreaves, & Miell, 2009), and also more specific behaviors, such as collecting music (Giles, Pietrzykowski, & Clark, 2007). Therefore, it is likely that people who are more engaged with music will experience more music. Similarly, participants whose identity is based more strongly on music might also experience more music and have a stronger desire to control the music that they encounter.

H6: Level of music engagement will be a significant predictor of the presence of music in everyday situations.

H7: Music-technology based identity will be a significant predictor of the presence of music in everyday situations.

H8: People who are considered to have higher levels of music engagement will desire to have more control over their listening.

H9: Music-technology based identity will be a significant predictor of the desire to control music listening.

A person's locus of control is another aspect of the individual that may be relevant to research on control and dominance in contextualized music listening. Locus of control refers to one's beliefs about the underlying causes of events: whereas externally focused people tend to describe behavior and events as guided by luck, internally focused people consider behavior and events as guided by personal effort and volition (Rotter, 1990). Of particular relevance to the present research, previous studies have shown that people with an internal locus of control demonstrate higher levels of planning and attention (Das, Naglieri, & Murphy, 1995) and may be more likely to listen to music via playlists, if indicative of a desire to

control and organize their perceptions. As such, it is plausible that locus of control is related to the desire to control one's listening.

H10: A person's locus of control will relate significantly to the desire to have control over listening to music.

In terms of the potentially relevant contextual variables, a number of factors that are not easily captured by Mehrabian and Russell's PAD dimensions may relate to in situ responses to music. These include when and where a person is, what the person is doing, how the music is heard, and how a person feels in the environment in terms of Mehrabian and Russell's PAD dimensions. For instance, prior research notes that the likelihood of experiencing music varies as a function of time of day and day of the week (see Chapter 2) as well as location (see Chapter 2). For instance, most listening occurs at home, although the increasing prevalence of mobile devices might reasonably be expected to alter how people encounter music in public spaces (Chapter 2). Therefore, it is predicted that when and where the individual is during the day will influence the presence of and perception of music in everyday life. Additionally for situations in which music is present, prior research has demonstrated that devices affording users more personalized control (e.g., a mobile mp3 player as compared to the radio) are accompanied by more positive responses to the music heard, including improved mood and positive perceived consequences (such as motivation) (Chapter 2). Therefore, it is expected that the device on which music is heard will contribute to a person's response to the music: specifically, devices affording personalized control (e.g., an mp3 player) should be associated with high ratings concerning choice, liking, and engagement. For similar reasons, device might also be related to the desire to have control over one's listening.

H11: The time of day will be related to whether music is present.
H12: The location will be related to whether music is present.
H13: The location will be related to ratings for liking for the music, choice over the music, arousal level, and engagement.

H14: The device on which music is heard will be related to a person's ratings for liking for the music, choice over the music, arousal level, and engagement.

H15: The device on which music is heard will relate to a person's desire to control their listening.

Regarding Mehrabian and Russell's PAD domains, it is expected that an individual's perception of dominance will be related to the presence of music during an episode because it reflects a person's degree of control over the situation (which includes the ability to choose to listen to music), and expect that dominance will remain a significant predictor amongst the other variables considered. Secondly, it is hypothesized that the person's environmental PAD ratings will relate to the responses to the music, such that the environmental arousal rating will relate to how arousing the music is perceived to be, that the pleasantness of the environment will relate to how much the music is liked, and that the perception of dominance in a particular situation will relate to having control over their listening. Additionally, if the model holds for responding to music as it has in retail settings, dominance may also be related to judgments of pleasure and arousal as well as approach behaviors (e.g., Ward & Barnes, 2001). Lastly, because the present research conceptualized dominance as control over listening, it is hypothesized that the environmental dominance rating will also be a significant predictor of the importance of controlling what is heard.

H16: Ratings of dominance concerning the situation will be related to the presence of music.

H17: Environmental arousal ratings will be related positively to how arousing the music is perceived to be; environmental pleasure ratings will positively relate to how much the music is liked; and dominance ratings for the situation will positively relate to ratings concerning having choice over the music.

H18: Ratings of dominance concerning the situation will be a significant predictor of ratings of the music in terms of liking, engagement, and arousal ratings.

H19: Situational dominance will be a significant predictor of the perceived importance of controlling music listening.

Lastly, with regard to *why* having control over listening to music may be important to people, two different motivations for having control might exist. The first would represent goals relating to well-being, given the literature showing control to be linked to positive outcomes, such as reduced stress and anxiety (e.g., Lachman & Weaver, 1998; C. Lee, Ford, & Gramotnev, 2009; Mitchell et al., 2008; Pothoulaki, MacDonald, & Flowers, 2012). The second type of motivation might reflect consumption-based motivations, such as fulfilling a particular goal (Botti & McGill, 2011; Choi & Fishbach, 2011).

H20: Factor analysis of ratings of statements concerning why control over music is important should produce a two factor solution concerning well-being and goal-based motivations.

4.2 Method

4.2.1 Participants.

Participants were recruited via advertising on the author's website and social media, the university's student research participation program, and dedicated online research participation websites. Participation was voluntary, although 190 university students received coursework credit and, as an incentive, participants were eligible to enter a prize draw for an iTunes gift card as compensation for their efforts.

628 individuals completed the online questionnaire, however analyses were performed using the data from only the 569 individuals who resided in Australia and the United States (71.90% Australia, 28.10% U.S.). The sample was predominantly female (75.70%), ages ranged from 18-78 years (M = 28.66, Mdn = 23, SD = 13.20), and 44.80% of the sample had a university qualification. Participants were engaged with music and technology on a daily basis (see Table 4.1). As per Krause, et al. (2013) and North and Hargreaves (1995), participants' levels of musical education and training were coded into one of three levels by three judges: 43.90% of the sample were rated as "low" (those with no to little experience), 45.30% as "moderate" (playing an instrument recreationally), and

10.70% as “high” (proficiency on an instrument as well as professional musicians, teachers, or having studied music at university). The intra-class correlation coefficient for the three raters was .90.

Table 4.1.

Sample Characteristics

Sample		Music importance rating	Technology importance rating	Average daily listening amount (hours)	Average daily technology use (hours)
Total	*M*	5.83	5.86	3.46	7.90
	Mdn	6	6	3	7
	SD	1.28	1.09	2.76	3.92
Australia	*M*	5.76	5.88	3.34	7.70
	Mdn	6	6	3	7
	SD	1.31	1.11	2.45	3.93
U.S.A.	*M*	6.02	5.82	3.78	8.41
	Mdn	6	6	3	8
	SD	1.18	1.04	3.43	3.88

4.2.2 Measures.

4.2.2.1 Background information. Individuals reported their sex, age, occupation, nationality, and country of residence. They then rated separately the importance of music in their lives (hereafter the “music importance rating”) on a seven-point Likert scale (1 = *not at all*, 7 = *extremely*), reported how many hours they listened to music on an average day, and wrote open-ended responses regarding their level of music education, as three measures of musical engagement. Participants then completed an author developed set of identity statements which asked them to state respectively the extent to which each of “Music”, “Music technology”, “Technology”, and “Cloud-based technology” “is central to my identity” on seven-point Likert scales (1 = *not at all*, 7 = *completely*). A music-technology identity score for each participant resulted from a principal components analysis,

which indicated that one factor accounted for 59.81% of the total variance (see Table 4.2). Cronbach's alpha for the music-technology identity was .77 for the present data, consistent with other uses of the measure (see Chapters 5 and 7-10). (A more in-depth consideration of this music-technology based identity appears in Chapter 7, section 7.3.2.)

Table 4.2.

Principal Components Analysis of the Identity Questionnaire Items

Identity statement	Component loading
Music technology is central to my identity.	0.86
Technology is central to my identity.	0.82
Web-based cloud technology is central to my identity.	0.71
Music is central to my identity.	0.69
Eigenvalue	2.39
% of variance	59.81

4.2.2.2 Locus of control. The Rotter (1966) Internal-External scale was used to measure locus of control. This forced-choice measure presents respondents with 29 pairs of statements, and asks them to select the statement within each pair that best describes themselves. For example, one item asks participants to choose whether people's misfortunes are due to their own mistakes (internal) or to bad luck (external). A low total score reflects an external locus of control, while a high score represents an internal locus of control. In this study, the Cronbach's alpha for the scale was .71, which is consistent with the internal consistencies reported by Rotter (1966).

4.2.2.3 Day Reconstruction Method. Following the Day Reconstruction Method protocol, as developed by Kahneman et al. (2004), participants reconstructed the previous day as a series of episodes from the time they woke up until they went to sleep. There was space to list ten episodes for the morning (from waking until lunch), afternoon (from lunch until dinner), and evening (from dinner until going to bed), with directions that stated it was not necessary to use all of the spaces.

For each episode, the response involved indicating an approximate start and end time, and selecting the location and activity from two respective lists of options (see Table 3.4). The options were derived from prior research utilizing the Day Reconstruction Method and Experience Sampling Method (Chapter 2; Kahneman, et al., 2004; North, et al. 2004) and represented a wide range of activities and locations common to everyday experiences. Participants completed Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance scale for the particular situation in question, which uses six items for each dimension, each of which is measured using seven-point semantic differential scales. For example, respondents are asked to mark how they feel in terms of being happy versus unhappy (pleasure scale), stimulated versus relaxed (arousal scale), and autonomous versus guided (dominance scale). The six responses for each dimension were averaged to create mean pleasure, arousal, and dominance scores. Note that due to the scale's presentation, feeling more pleasure, arousal, and dominance is indicated by a lower mean score. Cronbach's alpha for the pleasure, arousal, and dominance scales was .97, .88, and .90 respectively. Participants also indicated whether music was present during the episode by responding "yes" or "no."

If participants were exposed to music during the episode in question, they responded to a subsequent series of questions regarding that music. This involved selecting the listening device involved from a list of options, and rating (on 1-7 scales, anchored by *none/dislike very much* to *total/like very much*) how much choice they had in what was heard, how well liked the music was, how engaged with the music they were, and how arousing they considered the music to be (defined as "loud/ fast/ energizing"). Lastly, participants provided ratings of their agreement (1 = *not at all*, 7 = *completely*) with each of 10 statements concerning why having control over listening to music in that particular situation might be important. These reasons, such as "the music was a form of social support" and "the music allowed me to fulfill a goal", were developed from former research concerning choice and goals (Botti & McGill, 2011; Choi & Fishbach, 2011) and music and well-being (Mitchell & MacDonald, 2012; Pothoulaki et al., 2012). (Note that the entire measure appears in Appendix I.)

4.2.3 Procedure.

Participants accessed the questionnaire online. Individuals first read the participant information sheet and indicated their consent prior to gaining access to the questionnaire. They then completed the questionnaire as per the ordering detailed in the Measures section. Participants repeated the responses for each episode they listed, and, when finished, were redirected to a debriefing webpage. The length of time taken to complete the survey varied depending on the number of episodes a person entered: however, informal discussions with participants after completion indicated a typical completion time of 45 minutes.

4.3 Results & Discussion

4.3.1 Data analysis protocol.

To account for the fact that individual participants completed multiple episodes, a hierarchical structure whereby episodes were nested within participants was used when performing generalized linear mixed method (GLMM) analyses.

To address hypotheses 4-17, in particular, a two-step GLMM protocol was performed. First, the participant background characteristics (namely, gender, age, country of residence, university degree, music importance rating, music hours, music education rating, music identity score, and locus of control score) were included as predictor variables in order to determine which variables to include as covariates in a second GLMM analysis. Thus, the second GLMM analysis included the significant participant background variables and the episode variables (namely day of week, time of day, location, activity, pleasure, arousal, and dominance).

4.3.2 Theoretical hypothesis testing.

The results of the separate GLMM analyses ($\alpha = .005$) performed to address each individual hypothesis are detailed in Table 4.3.

4.3.2.1 H1. It was hypothesized that there would be an inverted-U relationship between the pleasure and arousal ratings assigned to both the listening situation (H1a) and the music itself (H1b). GLMM tests for only linear relationships, and so in order to test the hypotheses, the responses to the arousal items on the

Mehrabian and Russell measure (rated as 1-7) were recoded as -3 to +3 respectively, the mean was then calculated, and then the negative sign was removed. Thus, by removing the negative sign, high values represent ratings towards the poles of the scale, so that a positive relationship between ratings of pleasure and the transformed arousal values is indicative of a real-terms U-shape relationship, while a negative relationship is indicative of a real-terms inverted-U relationship. Ratings concerning the environment were consistent with the predicted inverted-U relationship, confirming H1a. However, ratings of the music (H1b) indicated that a U-shaped relationship existed between arousal and liking, indicating that music of very low or high arousal was liked most. This result is discrepant with Berlyne's theory, but consistent with that research cited earlier indicating that in situ musical preferences often reflect an attempt to achieve a polarized arousal state (e.g., relaxation).

4.3.2.2 H2. As hypothesized (H2a & H2b), the pleasure and dominance ratings were related positively, and this applied in the case of ratings applied to the listening situation and the music respectively. These results indicate that dominance is related to pleasure, and are notable as prior research utilizing the Mehrabian and Russell (1974) model has tended to focus on the relationship between pleasure and only arousal.

4.3.2.3 H3. Previous research suggests that the PAD domains influence approach behaviors, which were operationalized in the present research as engagement ratings concerning the music heard. Pleasure and dominance ratings concerning the environment were related positively to how engaged participants considered themselves to be with the music, confirming H3a and H3c. Moreover, liking for the music and ratings of choice concerning the music were positively related to the engagement ratings (confirming H3d and H3f respectively). As with the earlier analysis, the transformed arousal ratings were employed and indicated that there was a U-shaped relationship between arousal ratings assigned to the environment and engagement with the music (H3b) and between arousal ratings assigned to the music and engagement with that music (H3e) supporting a link between arousal-polarization and engagement. The finding of a U- rather than inverted-U-shaped relationship is consistent with the findings for H1b in suggesting

that music was employed by participants to achieve a particular, polarized arousal state.

Table 4.3.

GLMM Analysis Results Pertaining to Hypotheses 1, 2, and 3

Hypothesis	"Outcome" variable	"Predictor" variable	Beta	95% CI	*t*		DF	η^2
1a	Environmental pleasure mean	Environmental arousal magnitude	-0.04	[-.07, -0.01]	-2.38	*	5856	.001
1b	Music liking rating	Music arousal magnitude	0.06	[0.04, 0.09]	4.67	***	2251	.010
2a	Environmental pleasure mean	Environmental dominance mean	0.56	[0.51, 0.62]	19.09	***	5824	.059
2b	Music liking rating	Music choice rating	1.06	[1.02, 1.11]	45.05	***	2254	.474
3a	Music engagement rating	Environmental pleasure mean	-0.19	[-0.27, -0.12]	-4.97	***	2119	.012
3b	Music engagement rating	Environmental arousal magnitude	0.09	[0.04, 0.14]	3.48	**	2133	.006
3c	Music engagement rating	Environmental dominance mean	-0.23	[-0.32, -0.13]	-4.71	***	2109	.010
3d	Music engagement rating	Music liking rating	0.78	[0.74, 0.83]	36.63	***	2250	.374
3e	Music engagement rating	Music arousal magnitude	0.14	[0.11, 0.17]	8.53	***	2253	.031
3f	Music engagement rating	Music choice rating	0.44	[0.40, 0.48]	22.24	***	2257	.180

Note. *SE* = standard error; *CI* = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4.4.

Overall Frequencies Across the Responses

	Variable	Frequency	Percent
Day of the week	Monday	1197	18.7
	Tuesday	1557	24.3
	Wednesday	1138	17.8
	Sunday	978	15.3
	Thursday	825	12.9
	Saturday	370	5.8
	Friday	345	5.4
	Total	6410	100
Location	At home	3442	54.9
	In a car	792	12.6
	Other	544	8.7
	At work	534	8.5
	At a friend's house	236	3.8
	Walking	182	2.9
	Public transportation	154	2.5
	Restaurant	139	2.2
	Shopping	118	1.9
	At the gym	61	1
	Pub / club	38	0.6
	Religious worship	26	0.4
	At a concert	9	0.1
	Total	6275	100
Activity	Commuting	865	13.6
	Eating	805	12.6
	Working	567	8.9
	Computer / Internet/ email	485	7.6
	Self-care	452	7.1
	Watching TV	396	6.2
	Nap / resting	374	5.9
	Socializing	331	5.2

	Preparing food	203	3.2
	Listening to music	203	3.2
	Doing housework	195	3.1
	Exercising	182	2.9
	Reading	157	2.5
	Shopping	134	2.1
	Taking care of children	111	1.7
	On the phone	73	1.1
	Outdoor activities	65	1
	Volunteering	49	0.8
	Intimate relations	30	0.5
	Praying / worshiping / meditating	30	0.5
	Other	672	10.5
	Total	6379	100
Device	Radio	556	30.2
	Mobile mp3 player	263	14.3
	Computer - online streaming	185	10
	Computer - own collection	178	9.7
	Mobile telephone	146	7.9
	Stereo - mp3 device	145	7.9
	TV	121	6.6
	In public - recorded music	83	4.5
	Mobile CD player	72	3.9
	In public - live artist/group/ensemble	43	2.3
	Stereo - record	26	1.4
	Tablet	19	1
	Stereo - cassette	4	0.2
	Mobile gaming device	2	0.1
	Mobile cassette player	1	0.1
	Total	1844	100

4.3.3 Predicting the presence of music in everyday situations.

Overall, the sample provided data on a total of 6413 episodes (1575 episodes from USA-based participants, and 4838 from Australia-based participants). Individual participants entered between 1 and 30 episodes, completing an average of 11.34 episodes each (*Mdn* = 11, *SD* = 7.06). The reported frequencies of the locations, activities, and devices involved in the everyday episodes reported on are shown in Table 4.4. Music was involved in 2,311 episodes (36.00%) overall.

To investigate which variables distinguish episodes in which music was or was not present, the two-step GLMM analysis protocol was performed. From the first analysis, the participant background variables retained were age, country of residence, university degree, music importance rating, the average number of hours spent listening to music per day, and degree of music education which were then entered in the second GLMM analysis along with the episode variables. The second GLMM analysis was significant, F (48, 5521) = 18.96, $p < .001$ (see Table 4.5 for details).

Table 4.5.

GLMM Analyses Predicting the Presence of Music in an Episode, Ratings Concerning the Music, and the Importance of Having Control Over the Music

Variable	Presence of music (N = 5570)		Choice Rating (N = 1607)		Liking (N = 1602)	
	F	η_p^2	*F*	η_p^2	*F*	η_p^2
Gender	NA		*F* (1, 1548) = 0.40	.000	NA	
Age	*F* (1, 5521) = 1.49	.000	NA		NA	
Country of residence	*F* (1, 5521) = 7.75**	.001	NA		NA	
University degree	NA		NA		NA	
Music importance rating	*F* (1, 5521) = 12.45***	.002	*F* (1, 1548) = 2.68	.002	*F* (1, 1543) = 10.05**	.006
Daily listening amount (hours)	*F* (1, 5521) = 47.38***	.009	NA		*F* (1, 1543) = 4.78*	.003
Music education level	*F* (1, 5521) = 6.24*	.001	NA		NA	
Music-technology identity score	NA		NA		NA	
Day of week	*F* (6, 5521) = 1.46	.002	*F* (6, 1548) = 0.68	.003	*F* (6, 1543) = 0.81	.003
Time of day	*F* (2, 5521) = 19.60***	.007	*F* (2, 1548) = 2.80	.004	*F* (2, 1543) = 2.98	.004
Location	*F* (12, 5521) = 22.31***	.046	*F* (12, 1548) = 7.35***	.054	*F* (12, 1543) = 3.60***	.027
Activity	*F* (20, 5521) = 9.11***	.032	*F* (20, 1548) = 3.35***	.042	*F* (20, 1543) = 2.76***	.035
Device	NA		*F* (13, 1548) = 48.07***	.288	*F* (13, 1543) = 33.40***	.220
Pleasure average	*F* (1, 5521) = 2.44	.000	*F* (1, 1548) = 0.28	.000	*F* (1, 1543) = 4.14*	.003
Arousal average	*F* (1, 5521) = 17.38***	.003	*F* (1, 1548) = 1.04	.001	*F* (1, 1543) = 2.10	.001
Dominance average	*F* (1, 5521) = 8.77**	.002	*F* (1, 1548) = 10.00**	.006	*F* (1, 1543) = 3.94*	.003

(Table 4.5 continued)

Variable	Engaged (N = 1607)		Arousal (N = 1608)		Importance of control (N = 1557)	
	F	η_p^2	*F*	η_p^2	*F*	η_p^2
Gender	NA	NA	NA		NA	
Age	*F* (1, 1546) = 0.60	.000	*F* (1, 1547) = 2.24	.001	*F* (1, 1496) = 3.85	.003
Country of residence	NA		NA	NA	NA	
University degree	*F* (1, 1546) = 13.77***	.009	*F* (1, 1547) = 5.88*	.004	NA	
Music importance rating	*F* (1, 1546) = 32.13***	.020	*F* (1, 1547) = 2.16	.001	*F* (1, 1496) = 20.18***	.013
Daily listening amount (hours)	NA		NA		NA	
Music education level	NA		NA		*F* (1, 1496) = 6.73*	.005
Music-technology identity score	*F* (1, 1546) = 1.80	.001	*F* (1, 1547) = 3.51	.002	*F* (1, 1496) = 22.11***	.015
Day of week	*F* (6, 1546) = 1.95	.008	*F* (6, 1547) = 0.74	.003	*F* (6, 1496) = 0.49	.002
Time of day	*F* (2, 1546) = 0.05	.000	*F* (2, 1547) = 2.10	.003	*F* (2, 1496) = 2.32	.003
Location	*F* (12, 1546) = 2.55**	.019	*F* (12, 1547) = 3.08***	.023	*F* (12, 1496) = 3.20***	.025
Activity	*F* (20, 1546) = 2.64***	.033	*F* (20, 1547) = 2.20**	.028	*F* (20, 1496) = 2.68***	.035
Device	*F* (13, 1546) = 16.93***	.125	*F* (13, 1547) = 12.17***	.093	*F* (13, 1496) = 11.53***	.091
Pleasure average	*F* (1, 1546) = 6.17*	.004	*F* (1, 1547) = 0.31	.000	*F* (1, 1496) = 12.44***	.008
Arousal average	*F* (1, 1546) = 0.47	.003	*F* (1, 1547) = 14.77***	.009	*F* (1, 1496) = 0.33	.000
Dominance average	*F* (1, 1546) = 6.68*	.004	*F* (1, 1547) = 16.25***	.010	*F* (1, 1496) = 9.04**	.006

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.6

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analyses Concerning the Presence of Music, the Ratings Concerning the Music, and the Importance of Having Control Over the Music

	Music present? [a]			Choice [b]			Liking [c]		
Device	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
Mobile mp3 player				5.21	0.19	[4.84, 5.58]	5.94	0.14	[5.68, 6.21]
Mobile telephone				5.05	0.22	[4.61, 5.48]	5.68	0.16	[5.37, 5.98]
Mobile gaming device				2.46	1.44	[-0.36, 5.29]	5.28	1.04	[3.24, 7.33]
Mobile CD player				4.70	0.28	[4.15, 5.24]	5.65	0.20	[5.26, 6.04]
Tablet				4.72	0.43	[3.89, 5.56]	5.64	0.31	[5.03, 6.24]
Radio				2.69	0.18	[2.33, 3.05]	4.35	0.13	[4.10, 4.61]
TV				2.04	0.25	[1.55, 2.52]	3.83	0.18	[3.48, 4.18]
Computer -own collection				5.10	0.22	[4.67, 5.53]	5.77	0.16	[5.47, 6.08]
Computer- online streaming				4.64	0.22	[4.20, 5.07]	5.50	0.16	[5.19, 5.81]
Stereo - mp3 device				4.54	0.22	[4.11, 4.98]	5.50	0.16	[5.19, 5.81]
Stereo - cassette				6.54	0.83	[4.90, 8.17]	7.07	0.61	[5.89, 8.26]
Stereo - record				4.57	0.40	[3.79, 5.35]	5.78	0.27	[5.25, 6.32]
In public - live				3.43	0.30	[2.83, 4.02]	4.77	0.22	[4.34, 5.19]
In public - recorded				1.58	0.26	[1.07, 2.10]	4.14	0.19	[3.77, 4.52]
Location	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
At home	0.32	0.02	[0.28, 0.36]	5.19	0.17	[4.86, 5.52]	5.82	0.12	[5.86, 6.05]

At a friend's house	0.25	0.04	[.018, 0.34]	4.06	0.31	[3.45, 4.67]	5.02	0.22	[4.59, 5.46]
At work	0.27	0.04	[0.21, 0.35]	3.95	0.27	[3.41, 4.48]	5.27	0.20	[4.88, 5.66]
In a car	0.79	0.03	[0.73, 0.85]	5.18	0.23	[4.73, 5.63]	5.64	0.17	[5.31, 5.96]
Other	0.17	0.02	[0.13, 0.22]	4.08	0.25	[3.58, 4.57]	5.43	0.18	[5.08, 5.79]
Public transportation	0.30	0.06	[0.21, 0.42]	4.60	0.32	[3.97, 5.23]	5.24	0.23	[4.79, 5.69]
Walking	0.29	0.05	[0.21, 0.38]	4.82	0.31	[4.22, 5.43]	5.37	0.22	[4.93, 5.81]
Restaurant	0.43	0.06	[0.32, 0.54]	3.69	0.37	[2.97, 4.41]	5.04	0.27	[4.51, 5.57]
Pub/ club	0.61	0.10	[0.41, 0.77]	4.06	0.52	[3.05, 5.07]	5.04	0.37	[4.45, 5.64]
At the gym	0.51	0.09	[0.34, 0.69]	4.38	0.42	3.56, 5.19]	5.04	0.30	[3.84, 5.64]
Shopping	0.21	0.07	[0.11, 0.38]	3.79	0.61	[2.59, 4.98]	4.65	0.41	[3.84, 5.47]
Religious worship	0.40	0.13	[0.18, 0.66]	3.20	0.83	[1.57, 4.84]	6.32	0.62	[5.11, 7.53]
At a concert	0.65	0.21	[0.23, 0.92]	2.18	0.75	[0.71, 3.65]	5.67	0.54	[4.60, 6.73]
Activity	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
Commuting	0.44	0.04	[0.34, 0.52]	4.71	0.23	[4.25, 5.16]	5.84	0.17	[5.51, 6.16]
Shopping	0.32	0.08	[0.19, 0.50]	3.71	0.49	[2.74, 4.67]	5.24	0.35	[4.56, 5.93]
Working	0.39	0.05	[0.31, 0.48]	4.43	0.28	[3.87, 4.98]	5.53	0.20	[5.13, 5.93]
Volunteering	0.76	0.09	[0.56, 0.89]	5.07	0.43	[4.23, 5.91]	5.89	0.32	[5.27, 6.52]
Exercising	0.43	0.06	[0.32, 0.55]	4.38	0.32	[3.75, 5.01]	5.64	0.24	[5.18, 6.10]
Self-care	0.30	0.04	[0.23, 0.38]	4.37	0.27	[3.85, 4.90]	5.43	0.19	[5.06, 5.81]
Doing housework	0.45	0.06	[0.34, 0.56]	4.50	0.29	[3.92, 5.07]	5.41	0.21	[5.00, 5.82]
Taking care of children	0.29	0.06	[0.18, 0.42]	3.58	0.46	[2.68, 4.48]	5.45	0.33	[4.80, 6.09]
Preparing food	0.33	0.05	[0.24, 0.44]	3.82	0.31	[3.20, 4.43]	5.52	0.22	[5.08, 5.95]

Eating	0.24	0.03	[0.18, 0.30]	4.02	0.24	[3.54, 4.49]	5.31	0.17	[4.97, 5.65]
Socializing	0.33	0.04	[0.25, 0.41]	3.89	0.27	[3.37, 4.42]	5.40	0.19	[5.03, 5.78]
Nap/resting	0.21	0.04	[0.14, 0.29]	3.29	0.34	[2.63, 3.96]	4.74	0.24	[4.26, 5.22]
Outdoor activities	0.33	0.08	[0.20, 0.50]	4.41	0.47	[3.48, 5.33]	5.51	0.34	[4.84, 6.19]
Intimate relations	0.23	0.09	[0.10, 0.46]	2.40	0.73	[0.96, 3.84]	4.00	0.53	[2.95, 5.04]
Watching TV	0.24	0.04	[0.17, 0.32]	3.66	0.32	[3.02, 4.29]	5.48	0.23	[5.03, 5.94]
Reading	0.28	0.05	[0.19, 0.40]	5.01	0.36	[4.30, 5.71]	5.68	0.26	[5.17, 6.18]
Listening to music	0.97	0.01	[0.93, 0.99]	4.72	0.24	[4.25, 5.18]	5.74	0.17	[5.40, 6.07]
On the phone	0.13	0.05	[0.06, 0.26]	3.08	0.62	[1.86, 4.31]	3.79	0.45	[2.90, 4.67]
Computer/ Internet/ email	0.47	0.05	[0.38, 0.56]	4.29	0.25	[3.80, 4.78]	5.40	0.18	[5.05, 5.75]
Praying/ worshipping/ meditating	0.63	0.12	[0.39, 0.82]	4.04	0.70	[2.67, 5.42]	5.75	0.51	[4.75, 6.75]
Other	0.29	0.03	[0.23, 0.36]	4.54	0.24	[4.07, 5.00]	5.62	0.17	[5.28, 5.95]

(Table 4.6 continued)

	Engaged [d]			Arousal [e]			Importance of control [f]		
Device	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
Mobile mp3 player	5.01	0.17	[4.67, 5.35]	4.94	0.16	[4.62, 5.26]	0.24	0.08	[0.09, 0.40]
Mobile telephone	4.85	0.2	[4.46, 5.24]	4.54	0.19	[4.17, 4.91]	0.03	0.10	[-0.16, 0.22]
Mobile gaming device	6.46	1.27	[3.98, 8.95]	6.64	1.24	[4.21, 9.06]	0.4	0.77	[-1.12, 1.92]
Mobile CD player	4.62	0.25	[4.13, 5.11]	4.77	0.24	[4.30, 5.24]	0.21	0.12	[-0.02, 0.44]
Tablet	4.36	0.39	[3.60, 5.13]	4.81	0.37	[4.08, 5.53]	-0.16	0.18	[-0.51, 0.18]
Radio	3.40	0.17	[3.07, 3.72]	3.73	0.16	[3.42, 4.03]	-0.30	0.08	[-0.45, -0.14]

TV	3.50	0.23	[3.06, 3.94]	3.56	0.21	[3.14, 3.98]	-0.49	0.10	[-0.69, -0.29]
Computer -own collection	4.85	0.2	[4.46, 5.24]	4.85	0.19	[4.48, 5.22]	0.04	0.09	[-0.14, 0.22]
Computer- online streaming	4.45	0.20	[4.06, 4.84]	4.41	0.19	[4.04, 4.78]	-0.01	0.09	[-0.20, 0.17]
Stereo - mp3 device	4.49	0.20	[4.10, 4.89]	4.64	0.19	[4.27, 5.02]	0.06	0.09	[-0.13, 0.24]
Stereo - cassette	5.04	0.77	[3.54, 6.55]	4.75	0.73	[3.33, 6.17]	1.12	0.35	[0.43, 1.81]
Stereo - record	5.13	0.35	[4.45, 5.82]	5.38	0.34	[4.72, 6.03]	0.38	0.16	[0.07, 0.69]
In public - live	4.66	0.28	[4.11, 5.21]	4.15	0.26	[3.64, 4.66]	-0.02	0.13	[-0.26, 0.23]
In public - recorded	3.52	0.24	[3.05, 3.99]	3.87	0.23	[3.42, 4.31]	-0.37	0.11	[-0.58, -0.15]
Location	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
At home	5.02	0.15	[4.74, 5.31]	4.82	0.14	[4.54, 5.10]	0.17	0.08	[0.02, 0.33]
At a friend's house	4.30	0.28	[3.75, 4.85]	4.06	0.27	[3.53, 4.58]	-0.27	0.13	[-0.53, -0.01]
At work	4.62	0.24	[4.14, 5.09]	4.74	0.23	[4.29, 5.20]	0.03	0.12	[-0.21, 0.26]
In a car	5.19	0.21	[4.79, 5.60]	4.98	0.2	[4.60, 5.37]	0.15	0.10	[-0.05, 0.35]
Other	4.79	0.23	[4.35, 5.23]	4.87	0.21	[4.45, 5.29]	0.20	0.11	[-0.02, 0.41]
Public transportation	4.69	0.29	[4.13, 5.26]	4.38	0.27	[3.84, 4.92]	0.00	0.14	[-0.27, 0.27]
Walking	4.88	0.28	[4.33, 5.43]	4.75	0.27	[4.23, 5.28]	0.22	0.13	[-0.04, 0.47]
Restaurant	3.95	0.34	[3.29, 5.15]	3.97	0.32	[3.34, 4.60]	-0.33	0.16	[-0.63, -0.02]
Pub/ club	4.22	0.47	[3.30, 5.15]	4.56	0.45	[3.68, 5.44]	0.18	0.22	[-0.25, 0.61]
At the gym	4.83	0.38	[4.08, 5.57]	4.78	0.36	[4.08, 5.49]	0.49	0.17	[0.16, 0.83]
Shopping	3.67	0.56	[2.58, 4.76]	3.20	0.53	[2.16, 4.23]	-0.18	0.25	[-0.67, 0.32]
Religious worship	4.88	0.77	[3.37, 6.38]	5.43	0.73	[4.01, 6.86]	0.19	0.33	[-0.46, 0.84]

At a concert	4.72	0.73	[3.29, 6.16]	5.82	0.65	[4.54, 7.10]	0.20	0.30	[-0.38, 0.78]
Activity	*M*	*SE*	95% CI	*M*	*SE*	95% CI	*M*	*SE*	95% CI
Commuting	4.92	0.21	[4.52, 5.33]	4.97	0.20	[4.58, 5.36]	0.12	0.10	[-0.08, 0.33]
Shopping	4.37	0.45	[3.49, 5.26]	4.76	0.43	[3.92, 5.60]	-0.08	0.21	[-0.49, 0.32]
Working	4.22	0.26	[3.71, 4.72]	4.29	0.24	[3.81, 4.76]	0.06	0.12	[-0.18, 0.30]
Volunteering	5.02	0.40	[4.24, 5.80]	5.14	0.37	[4.40, 5.87]	-0.05	0.18	[-0.41, 0.31]
Exercising	5.24	0.29	[4.67, 5.82]	5.39	0.28	[4.85, 5.94]	0.38	0.14	[0.11, 0.64]
Self-care	4.54	0.24	[4.07, 5.01]	4.64	0.23	[4.19, 5.09]	0.02	0.12	[-0.21, 0.25]
Doing housework	4.75	0.27	[4.23, 5.28]	4.87	0.25	[4.37, 5.37]	0.19	0.13	[-0.05, 0.44]
Taking care of children	4.49	0.42	[3.67, 5.31]	4.15	0.40	[3.38, 4.93]	-0.06	0.19	[-0.43, 0.32]
Preparing food	4.40	0.28	[3.85, 4.95]	4.55	0.27	[4.03, 5.08]	0.05	0.13	[-0.21, 0.30]
Eating	4.10	0.22	[3.67, 4.53]	4.51	0.21	[4.10, 4.92]	-0.04	0.11	[-0.25, 0.17]
Socializing	4.15	0.24	[3.68, 4.62]	4.72	0.23	[4.27, 5.17]	0.00	0.12	[-0.22, 0.23]
Nap/resting	4.10	0.31	[3.50, 4.71]	4.15	0.29	[3.57, 4.72]	-0.34	0.14	[-0.63, -0.06]
Outdoor activities	5.03	0.43	[4.17, 5.88]	5.36	0.41	[4.55, 6.17]	0.46	0.20	[0.07, 0.84]
Intimate relations	4.08	0.68	[2.75, 5.41]	4.45	0.64	[3.19, 5.71]	-0.12	0.29	[-0.69, 0.46]
Watching TV	4.86	0.30	[4.28, 5.44]	4.96	0.28	[4.41, 5.52]	-0.04	0.14	[-0.31, 0.23]
Reading	4.50	0.33	[3.86, 5.13]	4.38	0.31	[3.78, 4.99]	0.31	0.15	[0.02, 0.60]
Listening to music	5.11	0.22	[4.69, 5.53]	5.03	0.21	[4.62, 5.43]	0.30	0.11	[0.10, 0.51]
On the phone	3.89	0.57	[2.77, 5.02]	3.31	0.54	[2.24, 4.37]	-0.23	0.25	[-0.72, 0.26]
Computer/ Internet/ email	4.31	0.23	[3.87, 4.76]	4.42	0.22	[4.00, 4.85]	0.06	0.11	[-0.16, 0.28]
Praying/ worshipping/ meditating	5.71	0.65	[4.44, 6.98]	4.90	0.61	[3.70, 6.10]	0.62	0.28	[0.07, 1.17]

Other	4.73	0.21	[4.31, 5.15]	4.58	0.20	[4.19, 4.98]	0.09	0.11	[-0.12, 0.29]

[a] Continuous predictors fixed at the following values: age=26.93, Daily listening amount=3.22, Music education level =1.65, Pleasure average =2.92, Arousal average =3.99, Dominance average=3.61.

[b] Continuous predictors fixed at the following values: Music importance rating=5.98, Pleasure average=2.78, Arousal average=3.75, Dominance average =3.43.

[c] Continuous predictors fixed at the following values: Music importance rating =6.00, Daily listening amount =3.87, Pleasure average =2.78, Arousal average =3.76, Dominance average =3.43.

[d] Continuous predictors fixed at the following values: age=26.83, Music importance rating =6.00, Music technology identity score =0.17, Pleasure average =2.78, Arousal average=3.75, Dominance average =3.43.

[e] Continuous predictors fixed at the following values: age=26.83, Music importance rating =5.99, Music technology identity score =0.17, Pleasure average =2.78, Arousal average=3.75, Dominance average =3.42.

[f] Continuous predictors fixed at the following values: age=26.91, Music importance rating =5.99, Music education level=1.75, Music technology identity score=0.17, Pleasure average =2.78, Arousal average =3.75, Dominance average =3.42.

Note. *SE* = standard error; *CI* = confidence interval.

Table 4.7.

Deviation Contrast Results from the GLMM Analyses Regarding the Presence of Music, the Ratings Concerning the Music, and the Importance of Having Control Over the Music

	Presence of music [a]			Choice ratings [b]				Liking ratings [c]			
Device	*t*	95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
Mobile mp3 player - Overall mean				6.27	***	[0.77, 1.47]	.025	4.56	***	[0.34, 0.84]	.013
Mobile telephone - Overall mean				4.74	***	[0.56, 1.35]	.014	2.23	*	[0.04, 0.61]	.003
Mobile gaming device - Overall mean				-1.22		[-4.24, 0.99]	.001	-0.07		[-1.96, 1.82]	.000
Mobile CD - Overall mean				2.42	*	[0.11, 1.10]	.005	1.63		[-0.06, 0.65]	.002
Tablet - Overall mean				1.63		[-0.13, 1.40]	.002	1.02		[-0.27, 0.84]	.001
Radio - Overall mean				-8.59	***	[-1.72, -1.08]	.045	-8.41	***	[-1.23, -0.77]	.044
TV - Overall mean				-9.08	***	[-2.50, -1.61]	.051	-9.27	***	[-1.85, -1.20]	.053
Computer (own) - Overall mean				5.46	***	[0.65, 1.38]	.019	3.13	**	[0.16, 0.69]	.006

Computer (online) - Overall mean					2.85	**	[0.17, 0.92]	.005	1.08		[-0.12, 0.42]	.001
Stereo mp3 - Overall mean					2.22	*	[0.05, 0.85]	.003	1.03		[-0.14, 0.44]	.001
Stereo cassette - Overall mean					3.16	**	[0.93, 3.97]	0.006	3.07	**	[0.62, 2.83]	.006
Stereo record - Overall mean					1.32		[-0.23, 1.20]	.001	1.70		[-0.07, 0.93]	.002
In public live - Overall mean					-2.06	*	[-1.30, -0.03]	.003	-2.54	*	[-1.04, -0.13]	.004
In public recorded - Overall mean					-8.95	***	[-3.06, -1.96]	.049	-5.88	***	[-1.61, -0.81]	.022
Location	*t*		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
At home	-2.64	**	[-0.14, -0.02]	.001	6.63	***	[0.78, 1.43]	.028	3.89	***	[0.23, 0.70]	.010
At a friend's house - Overall mean	-3.55	***	[-0.23, -0.07]	.002	-0.10		[-0.59, 0.53]	.000	-1.59		[-0.73, 0.08]	.002
At work - Overall mean	-3.27	**	[-0.21, -0.05]	.002	-0.57		[-0.34, 0.35]	.000	-0.44		[-0.44, 0.28]	.000
In a car - Overall mean	12.46	***	[0.33, 0.46]	.027	5.67	***	[0.71, 1.47]	.020	2.05	*	[0.01, 0.56]	.003
Other - Overall mean	-7.59	***	[-0.29, -0.17]	.010	-0.07		[-0.43, 0.40]	.000	0.54		[-0.22, 0.39]	.000

Public transportation - Overall mean	-1.91		[-0.20, 0.00]	.001	1.83		[-0.04, 1.05]	.002	-0.56		[-0.51, 0.28]	.000
Walking - Overall mean	-2.60	**	[-0.20, -0.03]	.001	2.78	**	[0.22, 1.25]	.005	0.08		[-0.36, 0.39]	.000
Restaurant - Overall mean	0.48		[-0.08, 0.14]	.000	-1.24		[-1.03, 0.23]	.001	-1.30		[-0.77, 0.16]	.001
Pub/ club - Overall mean	2.27	*	[0.03, 0.38]	.001	-0.06		[-0.91, 0.86]	.000	-0.95		[-0.96, 0.33]	.001
At the gym - Overall mean	1.29		[-0.06, 0.28]	.000	0.76		[-0.45, 1.02]	.000	-1.12		[-0.84, 0.05]	.001
Shopping - Overall mean	-2.78	**	[-0.32, -0.06]	.001	-0.55		[-1.40, 0.79]	.000	-1.82		[-1.45, 0.05]	.002
Religious worship - Overall mean	-0.01		[-0.25, 0.25]	.000	-1.13		[-2.43, 0.65]	.001	1.67		[-0.17, 2.11]	.002
At a concert - Overall mean	1.29		[-0.13, 0.63]	.000	-2.81	**	[-3.25, -0.58]	.005	0.64		[-0.65, 1.29]	.000
Activity	*t*		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
Commuting - Overall mean	1.29		[-0.03, 0.13]	.000	3.50	***	[0.27, 0.96]	.008	3.76	***	[0.23, 0.74]	.009
Shopping - Overall mean	-0.76		[-0.22, 0.10]	.000	-0.80		[-1.32, 0.55]	.000	-0.32		[-0.77, 0.55]	.000

Working - Overall mean	0.21		[-0.07, 0.08]	.000	1.53		[-0.10, 0.77]	.002	1.10		[-0.14, 0.49]	.001
Volunteering - Overall mean	4.68	***	[0.22, 0.54]	.004	2.63	**	[0.25, 1.71]	.004	1.93		[-0.01, 1.09]	.002
Exercising - Overall mean	0.87		[-0.06, 0.16]	.000	1.04		[-0.26, 0.85]	.001	1.38		[-0.12, 0.70]	.001
Self-care - Overall mean	-2.93	**	[-0.14, -0.03]	.002	1.59		[-0.07, 0.64]	.002	0.64		[-0.17, 0.34]	.000
Doing housework - Overall mean	1.36		[-0.03, 0.16]	.000	1.89		[-0.02, 0.83]	.002	0.39		[-0.25, 0.37]	.000
Taking care of children - Overall mean	-1.87		[-0.20, 0.01]	.001	-1.29		[-1.29, 0.27]	.001	0.34		[-0.47, 0.66]	.000
Preparing food - Overall mean	-1.29		[-0.13, 0.03]	.000	-1.12		[-0.75, 0.20]	.001	0.96		[-0.17, 0.50]	.001
Eating - Overall mean	-6.87	***	[-0.19, -0.11]	.008	-0.46		[0.40, 0.25]	.000	-0.35		[-0.27, 0.19]	.000
Socializing - Overall mean	-1.67		[-0.13, 0.01]	.001	-0.93		[-0.61, 0.22]	.001	0.34		[-0.25, 0.36]	.000
Nap/resting - Overall mean	-5.80	***	[-0.24, -0.12]	.006	-2.91	**	[1.34, -0.26]	.005	-3.07	**	[-1.00, -0.22]	.006

Outdoor activities - Overall mean	-0.70		[-0.19, 0.09]	.000	0.75		[-0.51, 1.14]	.000	0.53		[-0.44, 0.77]	.000
Intimate relations - Overall mean	-1.74		[-0.32, 0.02]	.001	-2.49	*	[-3.03, -0.36]	.004	-2.74	**	[-2.33, -0.39]	.005
Watching TV - Overall mean	-4.95	***	[-0.21, -0.09]	.004	-1.66		[-0.95, 0.08]	.002	0.71		[-0.24, 0.51]	.000
Reading - Overall mean	-2.19	*	[-0.19, -0.01]	.001	3.02	**	[0.32, 1.51]	.006	1.50		[-0.10, 0.75]	.001
Listening to music - Overall mean	22.65	***	[0.54, 0.64]	.085	3.50	***	[0.28, 0.98]	.008	2.96	**	[0.13, 0.64]	.006
On the phone - Overall mean	-5.34	***	[-0.35, -0.16]	.005	-1.75		[-2.14, 0.12]	.002	-3.73	***	[-2.38, -0.74]	.009
Computer/ Internet/ email - Overall mean	2.53	*	[0.02, 0.15]	.001	1.10		[-0.15, 0.55]	.001	0.38		[-0.20, 0.30]	.000
Praying/ worshipping/ meditating - Overall mean	2.24	*	[0.03, 0.47]	.001	-0.07		[-1.40, 1.31]	.000	0.80		[-0.58, 1.39]	.000
Other - Overall mean	-3.71	***	[-0.14, -0.04]	.002	2.77	**	[0.13, 0.76]	.005	2.24	*	[0.03, 0.50]	.003

(Table 4.7 continued)

Device	Engaged ratings [d]				Arousal ratings [e]				Importance of control [f]			
	t		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
Mobile mp3 player - Overall mean	2.55	*	[0.09, 0.73]	.004	1.90		[-0.01, 0.60]	.002	1.99	*	[0.00, 0.32]	.003
Mobile telephone - Overall mean	1.37		[-0.11, 0.61]	.001	-0.61		[-0.45, 0.24]	.000	-0.56		[-0.23, 0.13]	.000
Mobile gaming device - Overall mean	1.59		[-0.43, 4.16]	.002	1.74		[-0.25, 4.23]	.002	0.45		[-1.09, 1.73]	.000
Mobile CD - Overall mean	0.10		[-0.43, 0.47]	.000	0.57		[-0.30, 0.55]	.000	1.19		[-0.09, 0.35]	.001
Tablet - Overall mean	-0.65		[-0.94, .47]	.000	0.48		[-0.51, 0.83]	.000	-1.49		[-0.56, 0.08]	.001
Radio - Overall mean	-8.13	***	[-1.49, -0.91]	.041	-6.46	***	[-1.20, -0.64]	.026	-4.91	***	[-0.53, -0.23]	.016
TV - Overall mean	-5.30	***	[-1.50, -0.69]	.018	-5.49	***	[-1.47, -0.70]	.019	-5.77	***	[-0.77, -0.38]	.022
Computer (own) - Overall mean	1.49		[0.08, 0.58]	.001	1.26		[-0.11, 0.52]	.001	-0.48		[-0.21, 0.13]	.000

Computer (online) - Overall mean	-0.83		[-0.49, 0.20]	.000	-1.39		[-0.56, 0.10]	.001	-1.08		[-0.27, 0.08]	.001
Stereo mp3 - Overall mean	-0.57		[-0.47, 0.26]	.000	-0.01		[-0.35, 0.35]	.000	-0.28		[-0.21, 0.16]	.000
Stereo cassette - Overall mean	0.63		[-0.94, 1.84]	.000	0.16		[-1.22, 1.34]	.000	3.18	**	[0.40, 1.68]	.007
Stereo record - Overall mean	1.68		[-0.09, 1.17]	.002	2.37	*	[0.13, 1.34]	.004	1.98	*	[0.00, 0.59]	.003
In public live - Overall mean	0.22		[-0.52, 0.65]	.000	-1.80		[-1.04, 0.05]	.002	-0.75		[-0.36, 0.16]	.000
In public recorded - Overall mean	-4.19	***	[-1.58, -0.57]	.011	-3.19	**	[-1.26, -0.30]	.007	-3.68	***	[-0.68, -0.21]	.009
Location	*t*		95% CI	η^2	*t*		95% CI	η^2	*t*		95% CI	η^2
At home	2.76	**	[0.12, 0.73]	.005	1.20		[-0.11, 0.46]	.001	1.35		[-0.04, 0.23]	.001
At a friend's house - Overall mean	-1.14		[-0.81, 0.22]	.001	-2.37	*	[-1.07, -0.10]	.004	-3.05	**	[-0.58, -0.13]	.006
At work - Overall mean	0.08		[-0.43, 0.47]	.000	0.46		[-0.33, 0.53]	.000	-0.55		[-0.26, 0.14]	.000
In a car - Overall mean	3.35	**	[0.25, 0.95]	.007	2.02	*	[0.01, 0.67]	.003	0.87		[-0.09, 0.22]	.000
Other - Overall mean	0.98		[-0.19, 0.58]	.001	1.23		[-0.14, 0.59]	.001	1.33		[-0.06, 0.29]	.001

Public transportation - Overall mean	0.39		[-0.40, 0.60]	.000	-1.10		[-0.74, 0.21]	.001	-0.70		[-0.30, 0.14]	.000
Walking - Overall mean	1.17		[-0.19, 0.77]	.001	0.47		[-0.34, 0.56]	.000	1.32		[-0.07, 0.34]	.001
Restaurant - Overall mean	-2.18	*	[-1.24, -0.06]	.003	-2.40	*	[-1.23, -0.12]	.004	-3.14	**	[-0.66, -0.15]	.007
Pub/ club - Overall mean	-0.90		[-1.19, 0.44]	.001	-0.21		[-0.86, 0.69]	.000	0.52		[-0.27, 0.47]	.000
At the gym - Overall mean	0.66		[-0.45, 0.91]	.000	0.43		[-0.50, 0.78]	.000	2.78	**	[0.12, 0.70]	.005
Shopping - Overall mean	-1.80		[-1.94, 0.09]	.002	-2.96	**	[-2.41, -0.49]	.006	-1.12		[-0.70, 0.19]	.001
Religious worship - Overall mean	0.38		[-1.15, 1.70]	.000	1.15		[-0.56, 2.14]	.001	0.34		[-0.50, 0.72]	.000
At a concert - Overall mean	0.19		[-1.19, 1.43]	.000	1.98	*	[0.01, 2.34]	.003	0.46		[-0.40, 0.64]	.000
Activity	t		95% CI	η^2	t		95% CI	η^2	t		95% CI	η^2
Commuting - Overall mean	2.02	*	[0.01, 0.65]	.003	2.10	*	[0.02, .62]	.003	0.54		[-0.10, 0.18]	.000
Shopping - Overall mean	-0.51		[-1.09, 0.64]	.000	0.27		[-0.71, 0.93]	.000	-0.85		[-0.55, 0.22]	.000

Working - Overall mean	-1.87		[-0.78, 0.02]	.002	-1.85		[-0.74, 0.02]	.002	-0.23		[-0.20, 0.16]	.000
Volunteering - Overall mean	1.22		[-0.26, 1.10]	.001	1.50		[-0.15, 1.13]	.001	-0.83		[-0.43, 0.18]	.000
Exercising - Overall mean	2.47	*	[0.13, 1.16]	.004	3.02	**	[0.26, 1.23]	.006	2.63	**	[0.08, 0.52]	.005
Self-care - Overall mean	-0.34		[-0.38, 0.27]	.000	-0.03		[-0.31, 0.30]	.000	-0.87		[-0.20, 0.08]	.000
Doing housework - Overall mean	0.79		[-0.24, 0.55]	.000	1.19		[-0.15, 0.60]	.001	1.31		[-0.06, 0.28]	.001
Taking care of children - Overall mean	-0.29		[-0.82, 0.61]	.000	-1.42		[-1.17, 0.19]	.001	-0.85		[-0.46, 0.18]	.000
Preparing food - Overall mean	-0.90		[-0.63, 0.23]	.001	-0.45		[-0.50, 0.32]	.000	-0.36		[-0.22, 0.15]	.000
Eating - Overall mean	-3.30	**	[-0.80, -0.20]	.007	-0.94		[-0.42, 0.15]	.001	-1.85		[-0.25, 0.01]	.002
Socializing - Overall mean	-2.29	*	[-0.83, -0.06]	.003	0.42		[-0.29, 0.44]	.000	-0.89		[-0.24, 0.09]	.001
Nap/resting - Overall mean	-1.95		[-0.99, 0.00]	.002	-2.08	*	[-0.97, -0.03]	.003	-3.78	***	[-0.65, -0.20]	.009

Outdoor activities - Overall mean	1.10		[-0.33, 1.19]	.001	1.95		[-0.01, 1.44]	.002	2.19	*	[0.04, 0.71]	.003
Intimate relations - Overall mean	-0.82		[-1.76, 0.72]	.000	-0.33		[-1.37, 0.97]	.000	-0.75		[-0.72, 0.33]	.000
Watching TV - Overall mean	1.11		[-0.21, 0.74]	.001	1.41		[-0.13, 0.77]	.001	-1.13		[-0.33, 0.09]	.001
Reading - Overall mean	-0.36		[-0.64, 0.44]	.000	-1.00		[-0.77, 0.25]	.001	1.90		[-0.01, 0.46]	.002
Listening to music - Overall mean	3.13	**	[0.19, 0.84]	.006	2.45	*	[0.08, 0.69]	.004	3.04	**	[0.08, 0.37]	.006
On the phone - Overall mean	-1.32		[-1.75, 0.34]	.001	-2.65	**	[-2.33, -0.35]	.005	-1.37		[-0.76, 0.14]	.001
Computer/ Internet/ email - Overall mean	-1.73		[-0.61, 0.04]	.002	-1.43		[-0.53, 0.08]	.001	-0.28		[-0.16, 0.12]	.000
Praying/ worshipping/ meditating - Overall mean	1.75		[-0.14, 2.67]	.002	0.43		[-0.93, 1.44]	.000	1.98	*	[0.01, 1.08]	.003
Other - Overall mean	0.90		[-0.16, 0.43]	.001	-0.42		[-0.34, 0.22]	.000	0.08		[-0.13, 0.14]	.000

[a] DF = 5521

[b] DF = 1548

[c] DF = 1543

[d] DF = 1546

[e] DF = 1547

[f] DF = 1496

Note. *CI* = confidence interval.

* $p < .05$, ** $p < .01$, *** $p < .001$

Significant predictors concerning the participant included three music engagement variables, namely the music importance rating, average listening hours, and the degree of music education: these variables were positively related such that higher ratings were associated with a greater likelihood of music being present in a particular episode. This confirms H6 and H7. However, a person's age and sex were not significant predictors of whether music was present in a given episode, contrary to H4. Confirming H5, country of residence was significant, such that Australian residents were more likely to hear music in a given episode than were US residents. With regard to time of day (H11), the pattern of results indicated that individuals were significantly less likely to hear music as the day progressed from morning to afternoon to evening. Both location and activity were significant predictors also of the likelihood of music being present in a given episode, confirming H12. Estimated means (see Table 4.6) indicate that those activities in which music was commonly encountered included while volunteering and worshipping; and that, with regard to location, episodes taking place in a car were significantly more likely to involve music than were locations such as at work, walking, and shopping (Table 4.7). Finally, episodes in which participants gave higher arousal and dominance ratings were more likely to involve music, in support of H16.

4.3.4 About the episodes featuring music.

In order to address H11, H12, H15, and H16, four GLMM analyses investigated the factors that predict respectively (a) ratings of how much a person likes the music heard in a given situation; (b) ratings of how arousing a person considers the music to be; (c) ratings of how much choice a person has in listening to music; and (d) how engaged a person is with the music (how central the music was to the activity). Again, the two-step GLMM analysis protocol was used (α = .0125; note that the device used to play the music was included as an additional predictor variable in the second analyses).

4.3.4.1 Liking. From the first GLMM analysis, the music importance rating and music listening hours were retained for the second analysis concerning predictors of ratings of liking for the music. The second analysis was significant, F (58, 1543) = 14.77, $p < .001$ (see Table 4.5). Of the variables concerning the listener

him/herself, music listening hours and the music importance rating were related positively to liking for the music heard. With regard to the contextual variables, location, activity, and listening device were significant predictors of liking for the music, consistent with the findings of previous research (and supporting H13 and H14). High estimated means (Table 4.6) indicate high liking ratings for music heard while worshipping and at home (locations), while volunteering and commuting (activities), and on mobile mp3 players (device). Regarding Mehrabian and Russell's model, both pleasure and dominance ratings assigned to the situation were also positively related to liking for the music, in support of H17 and H18.

4.3.4.2 Arousal. Age, possession of a university degree, music importance rating, and music-technology identity score were significant variables in the first GLMM analysis; and so were retained in the second GLMM analysis concerning predictors of ratings of arousal assigned to the music. This analysis was significant overall, F (60, 1546) = 8.29, $p < .001$ (see Table 4.5). With regard to the listener-related variables, individuals with a university degree considered the music to be less arousing than those with a degree. As with the analysis of liking for the music, several of the context variables, namely location, activity, and device, were all significant predictors of ratings of how arousing the music was, supporting H13 and H14. Of all the activities considered, exercising was associated with the highest estimated mean ratings of how arousing the music was. With regard to the listening devices, mobile mp3 players were associated with the highest estimated means for how arousing the music was (see Table 4.6). Moreover, as hypothesized (H17), ratings of arousal assigned to the situation were positively related to ratings of how arousing the music was; and ratings of dominance assigned to the situation were positively related to ratings of arousal assigned to the music, supporting H18.

4.3.4.3 Choice. The preliminary GLMM analysis indicated that the music importance rating and gender should be included in the main GLMM analysis that concerned predictors of ratings of choice assigned to the music. The second analysis was significant overall, F (58, 1548) = 24.71, $p < .001$ (see Table 4.5 for details). No variables related to the listener were able to predict ratings of choice assigned to the music. Several context-related variables were able to predict ratings of choice assigned to the music. Ratings of dominance assigned to the situation were positively associated with ratings of choice assigned to the music, supporting H17;

and location, activity, and device were also related to the amount of choice participants had over the music experienced (supporting H13 and H14). Mobile mp3 players demonstrated high estimated means for ratings of choice; and music experienced at home, in the car, and while walking were associated with high choice ratings than the overall average. Moreover, choice ratings were higher than average while commuting and volunteering (Table 4.6 and 4.7).

4.3.4.4 Engagement. With regard to ratings of engagement with the music, the initial GLMM showed that age, possession of a university degree, music importance rating, and music-technology identity score should be retained for inclusion in the main analysis. This second analysis was significant, F (60, 1546) = 10.73, $p < .001$; see Table 4.5. The music importance rating was related positively to engagement ratings, whereas individuals with university degrees rated their engagement with the music as lower than those without university degrees. Similar to the results concerning the choice, liking, and arousal ratings, engagement was also predicted by location, activity, and device: as such, the context itself is related to one's level of engagement with the music in an environment in support of H13 and H14. Higher than average engagement ratings were associated with mp3 players, while high estimated means indicate high engagement with for music heard in the car and at home, and while worshipping, exercising, and listening to music (Table 4.6 and 4.7). Pleasure and dominance ratings assigned to the environment were also significant positive predictors of engagement with the music, confirming H17 and H18. Indeed it is noteworthy that, as predicted by H16, dominance ratings assigned to the environment were related to all four responses concerning the music - namely how much it was liked, how arousing it was, how much choice participants had over it, and how engaged participants were with it - illustrating the value of dominance as a theoretical concept in explaining everyday listening.

4.3.5 Control over everyday music listening.

Further analysis tested the issue addressed in H20 concerning the identification of the underlying reasons why having control over music listening is important in everyday contexts. Ratings of the ten statements regarding why having control over music listening was important were subjected to a principal

components analysis with varimax rotation. This produced a one-factor solution (see Table 4.8), the general control dimension, which accounted for 63.99% of the total variance. It suggests that the different health- and goal-related reasons for wishing to have control over music are subsumed under a general desire for having control over one's listening. As such, in direct response to H20, it appears that a general and non-specified desire for control, rather than any more specific motivation, explains why the importance of control in everyday music listening.

Table 4.8.

Principal Components Analysis of the 10 'Importance of Having Control Over Listening' Items

Questionnaire Item	Loading
The music increased my coping abilities/ helped me cope.	0.88
The music helped me regain a sense of control/ was an aspect of the environment I could manage.	0.87
The music helped me regulate my emotions.	0.86
The music modified the perception of pain/ distress.	0.84
The music assisted me in reaching a broader goal.	0.79
The music allowed me to express a preference.	0.79
The music allowed me to fulfil a goal.	0.78
The music distracted me from other things.	0.75
The music was a form of social support.	0.72
The music acted as a companion.	0.69
Eigenvalue	6.40
% of variance	63.99

To test H8, H9, H10, H15, and H19, the two-step GLMM protocol was used to establish what aspects of the listener and situation are related to perceptions of the importance of having control over music listening, by employing the analysis to predict scores on the general control factor resulting from the principal components analysis.

The initial GLMM analysis indicated that age, the music importance rating, level of music education, and music-technology identity score should be retained for inclusion in the second analysis. The second analysis was significant overall, F (60, 1496) = 9.62, $p < .001$ (see Table 4.5 for details). The music importance rating and music-technology identity scores were positively associated with scores on the general control factor: those with an identity more defined by music-technology and those placing a greater importance on music in their lives expressed higher desires for general control over their listening, confirming H8 and H9. Somewhat surprisingly, the extent of a participant's music education was related negatively to the general control score, such that control over the music was more important for those with less music education. Contrary to H10, locus of control was not a significant predictor of perceptions of the importance of having control over the music. Location, activity, and device (H15) were also significant predictors of the general control scores. High estimated means indicate that the desire to control one's listening was associated with personalized listening devices. Moreover, the gym and walking were locations associated with higher control desires, as were the activities worshipping and exercising (see Table 4.6). As H19 predicted, dominance ratings assigned to the situation were also related positively to general control scores, such that situations in which the listeners felt more dominant were associated with higher scores on the general control factor. Pleasure ratings assigned to the situation were also related positively to general control scores, again highlighting the apparent relationship between control and pleasure.

4.3.6 Device versus dominance.

One of the main issues considered in the literature review was the importance (and perhaps predominance) of control, and so before concluding it is interesting to overview some aspects of the data that appear to support this possibility. To explore whether ratings of dominance were more important as a predictor variable than the others, the main effect F values pertaining to each predictor variable were converted into eta-squared values in order to consider the percentage of variance explained by each (see Table 4.5). This showed that device, location, and activity accounted for the largest relative percentages of variance in

the outcome variables. However, simply concluding that device, location, and activity are more important than dominance based on the amount of variance explained is misleading. We do not believe that device, location and activity are the most important variables in the present analyses. Firstly, "device" is not a theoretical construct, and the listening devices used during daily life change over time. Arguably the main dimension along which devices differ concerns the level of personalized control they inherently offer users: mobile mp3 players, for instance, allow for a high degree of personal control over listening, in contrast to the radio or music heard broadcasted over loudspeakers while in a public place. Thus, inherent to the listening device, as a predictor variable, is the notion of control, or dominance.

Drawing on the deviation contrasts concerning device (Table 4.7), the results concerning mobile mp3 players and smartphones (devices offering users high levels of personalized control) contrast with those concerning the radio and television (devices with low levels of personalized control). The mobile devices resulted in ratings that were significantly higher than the overall mean in the case of choice, liking, and engagement, while the television and radio resulted in significantly lower ratings than the overall mean. Moreover, the same pattern resulted when considering ratings of the importance of control over one's listening. Broadcasted recorded music in public (representative of having little to no control over the music encountered) gave rise to significantly lower ratings for liking, arousal, choice and engagement concerning the music and also lower scores on the general control factor. Additionally, location and activity, as variables, might also be proxies for dominance, and they could even reasonably be proxies for arousal and pleasure also: future research could explore this issue.

4.3.7 Limitations.

While the research included participants from Australia and the US, it would be interesting to undertake a broader examination that considers how motivations underlying music listening may vary cross-culturally. Moreover, while the Day Reconstruction Method has been shown to provide reliable and similar results to studies utilizing the Experience Sampling Method, thus capturing a person's daily experience (Kahneman et al., 2004; Stone et al., 2006), this still only provides a

snapshot of a person's interactions with music over the course of a single day. A diary study or other longitudinal method may afford researchers a more in-depth exploration of patterns of music listening. This could be carried out in conjunction with collection of qualitative data that would allow more detailed consideration of (and participants' own input into) the tentative explanations offered here, as well as some insight into the extent to which factors such as dominance are at the forefront of consciousness when listening to music in everyday life.

Moreover, while the present study attempted to tease out the reasons why people desire to have control over their listening, the principal components analysis did not distinguish consumption-based goals from reasons concerning well-being: future research may explore the nature of the importance of control in greater detail.

4.4 Conclusion

In summary, analyses regarding Hypotheses 1-3 demonstrated that, in terms of ratings concerning the environment, the proposed inverted-U relationship was found (H1a), although a U-shaped relationship was demonstrated in liking and arousal ratings assigned to the music (H1b), which appears more consistent with other research indicating that in situ uses of music are associated with attempts to achieve a particular (often polarized) arousal state. Pleasure and dominance (concerning both the situation and the music) were related positively, confirming H2a and H2b. Moreover, the PAD dimensions were related to how engaged people were with the music (representative of an approach behavior): pleasure and dominance ratings of the situation and the music were each positively related to engagement ratings (confirming H3a, H3c, H3d, and H3f). Environmental arousal ratings demonstrated the proposed inverted-U relationship with engagement (H3b), while arousal ratings of the music implied a U-shaped relationship with engagement (H3e), which again appears consistent with an attempt to use music in situ to achieve a particular arousal state.

The present analyses were able to consider the importance of both characteristics of the individual listener as well as characteristics of the context in which each particular everyday episode occurred. While age and sex were not indicative of the presence of music (H4), country of residence was related to the

presence of music (H5). Additionally, other listener characteristics, including how important people consider music to be in their life and their music identity, were important in explaining the presence of music (confirming H6-7) and response to music in daily life. Additionally, there was a positive relationship between engagement with music and a desire to control listening (confirming H8-9), although locus of control was not relevant to this desire (H10).

The results provided strong evidence concerning the role of contextual features in everyday music listening episodes. The time of day and the location and activity were important in explaining whether music was present in the episode in question (confirming H11 and H12). Location and activity were also related to how the music was perceived when it was present (confirming H13) and the desire to control music listening. The device involved in hearing the music was similarly related to how the listener experienced the music (confirming H14) and to the person's desire to control their listening (confirming H15).

With regard to the PAD dimensions, dominance was a significant predictor of the presence of music in everyday situations, how the music was perceived, and the relative importance of having control over the music heard (confirming H16-19). The pleasure and arousal dimensions were also useful predictors. Pleasure arising from the situation was a significant predictor of ratings of liking for the music (confirming H18), engagement with the music, and having control over music listening; while the extent to which the situation was arousing was a significant predictor of the presence of music and of ratings of how arousing the music was itself (confirming H18).

This study's significant contribution to studying everyday music interactions is its application of Mehrabian and Russell's PAD dimensions to everyday listening; and the most striking aspect of the present results concerns the role of Mehrabian and Russell's dominance dimension. It was a significant predictor in each analysis, and apparently has a wide-reaching influence on people's everyday experiences with music. This contrasts with prior research, which has focused on the pleasure and arousal dimensions only, and is particularly notable because the growing proliferation of digital music technology means that the ability to control one's auditory environment has increased: dominance may be an increasingly relevant aspect of in situ responses to music in coming years.

Future research is necessary to refine the application of Mehrabian and Russell's model to music listening. For instance, do individuals' responses in terms of the three dimensions of pleasure, arousal, and dominance vary in certain everyday contexts? One possibility is that low pleasure and dominance might be felt more keenly by participants in contexts in which these are usually high, and that arousal is particularly important in contexts where a polarized arousal state is central to those contexts (e.g., while relaxing or exercising as compared to doing housework or using public transport). This idea is explored further by the research in the following chapter, which details an experiment in which the music and location of a listening task were manipulated in order to consider people's responses using the PAD model.

Chapter 5: How Does Location and Control Over the Music Influence Listeners' Responses?[4]

In a musical context, Chapters 3 and 4 have specifically conceptualized dominance in terms of the amount of choice one has over the decision to hear music at all, and if so what that music should be. Related findings indicate a positive relationship between pleasure and dominance regarding people's responses to music (Chapters 3 and 4). Given technological developments in how individuals listen to music, which afford users the ability to control what they hear, it is important to consider the level of choice and control a person has over the music that he or she experiences in situ, and the present experiment does this in the context of Mehrabian and Russell's (1974) PAD model.

In order to examine everyday listening in terms of the PAD model, age, sex, music engagement, and music identity must be considered as control variables, given the considerable quantity of previous research implicating these individual differences in responses to music (previously discussed in Chapter 2). Similarly, personality traits relate to musical taste/preference (e.g., North, 2010; Rentfrow & Gosling, 2003; Rentfrow & McDonald, 2010) and are also associated with varying uses of music (e.g., Chamorro-Premuzic & Furnham, 2007; Chamorro-Premuzic, Swami, & Cermakova, 2012), so it is possible that personality is related to responses to the music also and should similarly be included as a control variable.

The present experiment uses the PAD domains to consider the individual's degree of control over music selected for a particular listening episode and the location in which the listening takes place. The prior research using the PAD model in a musical context is based on observational data; and although ecologically valid, as it was captured in-situ (via the Experience Sampling Method and Day

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[4] *Note*. The material used in this chapter also appears in a manuscript that will be submitted for publication. A co-author statement is located in Appendix B.

Krause, A. E., & North, A. C. (2014). How does location and control over the music influence listeners' responses? *Manuscript submitted for publication.*

Reconstruction Method for example – see e.g. Chapters 2 and 4; North, et al., 2004; Greasley & Lamont, 2011), the application of the PAD model to everyday music listening can benefit from consideration via an experimental design. Importantly, by manipulating both the context and the degree of control exerted over the music, this experiment aims to specifically consider how everyday listening may be captured by Mehrabian and Russell's dominance domain. Thus, systematically manipulating these two variables allows for the consideration of causal relationships using ecologically valid stimuli.

In particular, participants were asked to listen to music, from either their personal collection or provided by the experimenter, in one of three specific contexts, selected as representing putatively high arousal (a gym), 'normal' conditions (commuting), or a conventional experimental lab-based setting. All participants used mobile listening devices. The result of this manipulation will be evaluated using the PAD domains in terms of people's responses to the music as well as their experience of the situation overall. Regarding the response to music, pleasure, arousal, dominance are operationalized as how much a person likes the music heard, how arousing the person considers the music to be, and how much choice a person has in listening to the music (in this study, as how much control a person felt he/she had over the music listened to).

Firstly, this experiment addresses the relationship between pleasure, arousal, and dominance, based on predictions drawn from Mehrabian and Russell's (1974) and Berlyne's (1971) theories.

H1a: Pleasure and arousal ratings regarding the overall episode will demonstrate an inverted-U relationship.

H1b: Pleasure and arousal ratings regarding the music will demonstrate an inverted-U relationship.

H2a: Pleasure and dominance ratings regarding the overall episode will demonstrate a positive relationship.

H2b: Pleasure and dominance ratings regarding the music will demonstrate a positive relationship.

The primary objective of this experiment, however, was to examine how the manipulation of location and music might influence people's response to the music

in terms of pleasure, arousal, and dominance. The specific hypotheses concerning both location and the music are listed below.

H3a: There will be a significant interaction between the music type and location.

H3b: Controlling for individual differences factors, ratings of liking of the music (pleasure) will vary by location.

H3c: Controlling for individual difference factors, ratings for the feeling of having control over the music (dominance) will vary by the location.

H3d: Controlling for individual difference factors, participants listening to self-selected music will rate their liking of the music (pleasure) higher than those listening to experimenter-provided music.

H3e: Controlling for individual difference factors, participants will rate their sense of control (dominance) higher when they listen to self-selected music compared to the experimenter-provided music.

A second set of hypotheses considers individual responses in terms of their overall experience on the PAD dimensions. Again, individual differences are controlled for, and it is possible that the music and location will interact. Additionally, there are six specific hypotheses.

H4a: Controlling for individual difference factors, the location in which participants listen to the music will affect their ratings of pleasure, arousal, and dominance regarding the overall experience.

H4b: Controlling for individual difference factors, participants' dominance ratings concerning their overall experience will be higher when listening to self-selected music as opposed to experimenter-provided.

H4c: Controlling for individual difference factors, participants will rate their overall experience as more pleasurable when listening to self-selected music as opposed to experimenter-provided.

H4d: Controlling for individual difference factors, there will be a positive relationship between pleasure ratings assigned to the music and the overall experience.

H4e: Controlling for individual difference factors, there will be a positive relationship between arousal ratings assigned to the music and the overall experience.

H4f: Controlling for individual difference factors, there will be a positive relationship between the dominance ratings assigned to the music and the overall experience.

5.1 Method

5.1.1 Participants.

Participants were students of an Australian university, and were also gym members (due to the possibility of being allocated to completing the listening task at the gym). While 285 individuals provided their background information and contact details, analysis was performed using the data from the 216 participants who completed the experiment fully (75.79% completion rate). The 216 participants were aged 17-51 years (M = 21.50, Mdn = 19, SD = 5.80) and 170 (78.70%) were female. Table 5.1 shows that participants were engaged with music and technology on a daily basis. As in previous research (e.g. Chapters 2 and 4; North & Hargreaves, 1995), three judges rated the participants' levels of musical education and training. The intra-class correlation coefficient for the three judges was .86; resulting in 44.00% of the sample classified as "low" (i.e., no to little experience), 50.50% classified as "moderate" (i.e., playing an instrument recreationally), and 5.60% classified as "high" (i.e., proficiency on an instrument, having studied music at university, and/or professional musicians/ music teachers).

Participation was voluntary, although participants were eligible to win one of four $50 iTunes gift vouchers. Additionally, university students who participated via the University's research participation program received course credit for their participation.

Table 5.1.

Sample Characteristics

Sample	Music importance rating	Technology importance rating	Average daily listening amount (hours)	Average daily technology use (hours)	Music education level rating

M	5.83	6	3.18	7.68	
Mdn	6	6	3	7	2
SD	1.17	1.10	2.09	3.80	
N	215	216	216	216	216

5.1.2 Research design.

This experiment employed a 3 (location) x 2 (music) independent-subjects design. Participants were allocated to one of the six conditions using block randomization (for each gender, randomized sets of numbers (1-6) were created using www.randomizer.org).

5.1.2.1 Locations. All participants were asked to listen to 15 minutes of music in a particular situation, namely in the laboratory, on public transportation, or while at the gym. Participants assigned to the gym and public transportation conditions were instructed to complete the listening task when they next entered the locations in question. Participants assigned to the laboratory condition made arrangements to complete the listening task at a convenient time.

5.1.2.2 Music. All participants listened to a 15-minute playlist. The experimenter-provided music conditions involved the participants listening to a pre-assembled playlist of songs, involving current "top 10" chart music as denoted by the local radio station at the time (see Appendix L). Participants in the "experimenter-provided" condition were given the experimenter-provided music playlist as an mp3 file to upload onto their listening device (with instructions not to listen to it until completing the listening task). Those in the "personal music" condition were asked to create a 15-minute playlist for use in their allocated location (with instructions not to listen to this playlist until completing the listening task).

5.1.3 Measures.

5.1.3.1 Preliminary questionnaire. Participants reported their sex and age. They then rated separately the importance of technology and music in their lives (hereafter the "technology importance rating" and "music importance rating" respectively) on seven-point Likert scales (1 = *not at all*, 7 = *extremely*), and reported how many hours they listened to music on an average day and how many

hours they interacted with technology on an average day as measures of engagement. They also wrote an open-ended response regarding their musical education background.

Participants were asked to state respectively the extent to which each of "Music", "Music technology", "Technology", and "Cloud-based technology" "is central to my identity" on seven-point Likert scales (1 = *not at all*, 7 = *completely*). As with other uses of the measure (see Chapters 4 and 7-10), responses on these four statements were then entered into a principal components analysis with varimax rotation. One factor accounted for 63.64% of variance (see Table 5.2), consistent with other uses of the measure. The resultant factor scores are used as music-technology identity scores in analyses (Cronbach's alpha = .81).

Table 5.2.

Principal Components Analysis of the Identity Questionnaire Items

Identity Statement	Loading
Music technology is central to my identity.	0.89
Web-based cloud technology is central to my identity.	0.81
Technology is central to my identity.	0.76
Music is central to my identity.	0.72
Eigenvalue	2.55
% Variance Explained	63.64

Participants also indicated how often they accessed music in different formats (namely, physical media, digitally via a computer, digitally via a mobile device, from an internet source, and from a cloud source) and made selection decisions regarding their listening (namely, choosing a specific artist/ song/ album selection, playlist, random/shuffle, and other) on seven-point scales (1 = *never*, 7 = *always*). Lastly, they completed Langford's (2003) short form of the "Big Five" personality inventory, chosen for its concise nature and demonstrated reliability (Langford, 2003; North, 2010), as previous research showed there was only a slight decline in predictive validity associated with the decrease in the total number of items, thus supporting the use of the shortened measure when multiple measures

are administrated or administration time is short (Langford, 2003). In this short form, the items with the highest factor loadings were retained so that one item represented each of the Big Five personality traits (loadings between .69 and .82; *M* = .76). This measure requires participants to rate themselves on seven-point scales, with one item representing each of the five personality dimensions. Openness, conscientiousness, extroversion, agreeableness, and neuroticism are represented by "uncreative-creative," "lazy-hard working," "shy-outgoing," "headstrong-gentle," and "nervous-at ease" respectively.

5.1.3.2 Listening task questionnaire. Following their listening task, participants completed a short questionnaire on which they rated how they perceived the music as well as their overall experience. Specifically, participants rated how often they found themselves in the situation in question (from 1 = *never* to 7 = *a lot*; hereafter referred to as the "novelty" rating). Using seven-point scales (1 = *not at all*, 7 = *very much*), individuals answered three questions about the music that provided data concerning pleasure, arousal and dominance, namely, "How much did you like the music you listened to?," "How arousing did you consider the music to be?," and "How much control did you feel you had over the music that you listened to?" respectively. An additional question concerning the music asked how familiar the music was (hereafter referred to as the "familiarity rating"). Three further questions obtained ratings on the same seven-point scales that addressed feelings of pleasure, arousal and dominance with regard to the participant's assessment of the episode overall: these questions were "How much did you enjoy the overall episode?," "How arousing did you find the overall episode?," and "How much control did you feel you had over the entire episode?"

5.1.4 Procedure.

After reading the information sheet and providing consent, participants completed the preliminary questionnaire online. All participants were then contacted twice via email. The first email provided instructions regarding their allocated task (i.e., the location of music listening) and asked for a reply to confirm participant understanding (and to arrange a time to complete the task for participants in the laboratory condition). The second email provided instructions regarding the playlist music and how to complete the task questionnaire, with a

participant identification number. Note that the only differences in text used in differing conditions were those required to reflect the nature of those conditions.

Every participant used his or her own personal music listening devices with headphones to listen to the music for approximately 15 minutes in the particular location as allocated. Immediately following the 15-minute listening, participants used an internet-enabled mobile device to complete the task questionnaire. All participants were debriefed and thanked for their participation via the final webpage of the task questionnaire.

5.2 Results and Discussion

5.2.1 Hypotheses 1 and 2.

Four separate generalized linear mixed method (GLMM) analyses ($\alpha = .013$) were performed to address hypotheses 1 and 2.

5.2.1.1 H1. It was hypothesized that there would be an inverted-U relationship between the pleasure and arousal ratings assigned to both the overall episode (H1a) and the music itself (H1b). In order to perform GLMM analyses for the inverted-U relationship, the responses to the overall episode and music arousal questionnaire items (rated as 1-7) were recoded as -3 to +3 respectively, and then the negative sign was removed. Thus, high values represent ratings towards the poles of the scale, so that a positive relationship between ratings of pleasure and the transformed arousal values is indicative of a real-terms U-shape relationship, while a negative relationship is indicative of a real-terms inverted-U relationship. Ratings concerning the overall episodes were consistent with the predicted inverted-U relationship, confirming H1a ($\beta = 0.45$ [0.24, 0.67], t (214) = 4.08, $p < .001$, $\eta^2 = .072$). However, there was a non-significant result regarding ratings of the music (H1b; $\beta = 0.03$ [-0.04, 0.09], t (214) = 0.81, $p = .421$, $\eta^2 = .003$). Therefore, there was no evidence of an inverted-U relationship between ratings of pleasure and arousal for the music. This result is discrepant with Berlyne's theory.

5.2.1.2 H2. As hypothesized (H2a & H2b), the pleasure and dominance ratings were related positively, in the case of ratings regarding both the overall situation ($\beta = 0.49$ [0.29, 0.70], t (214) = 4.80, $p < .001$, $\eta^2 = .097$) and the music ($\beta = 0.81$ [0.64, 0.98], t (214) = 9.64, $p < .001$, $\eta^2 = .303$). These findings are consistent

with those reported in Chapter 4, indicating that dominance is related positively to pleasure, and are notable as prior research utilizing the Mehrabian and Russell (1974) model has tended to focus on the relationship between pleasure and only arousal.

5.2.2 Music Ratings.

In order to address the main hypotheses, H3a-d, three separate GLMM analyses ($\alpha = .017$) investigated the participants' response to the music according to the PAD dimensions. A separate GLMM analysis considered the liking ratings, arousal ratings, and dominance ratings to the music as the outcome variable. In order to determine which individual difference control variables were included, bivariate correlations were first conducted between the individual difference control variables and criterion variables (see Table 3). The control variables demonstrating significant correlations ($\alpha = .05$) were retained as predictor variables along with the music familiarity rating, novelty rating, music type, location, and music type by location interaction which were also entered as predictor variables in each GLMM analysis. The results are discussed in the following subsections organized by outcome variable.

Table 5.3.

Summary of Bivariate Correlations Concerning the Potential Predictor Variables and Outcome Variables

Variable		Music liking (pleasure) rating	Music arousal rating	Music dominance rating	Episodic pleasure rating	Episodic arousal rating	Episodic dominance rating
Sex	*r*	-.04	-.03	-.06	.01	.02	-.03
	N	216	216	216	216	216	216
Age	*r*	-.04	-.05	-.07	-.07	-.11	-.04
	N	216	216	216	216	216	216
University qualification	*r*	.02	-.02	.03	.05	-.06	-.04
	N	216	216	216	216	216	216
Music importance rating	*r*	.05	.06	.09	.01	.08	-.07
	N	215	215	215	215	215	215
Technology importance rating	*r*	.00	.00	.14*	.11	.03	.07
	N	216	216	216	216	216	216
Average daily listening amount (hours)	*r*	.02	.10	.05	-.01	.10	-.04
	N	216	216	216	216	216	216
Average daily technology (hours)	*r*	.10	.01	.09	.15*	.13	.09
	N	216	216	216	216	216	216

Music education level (1-3)	*r*	.09	-.02	.05	.09	.06	.02
	N	216	216	216	216	216	216
Collection access: Physical CDs/ tapes/ records	*r*	.04	-.06	.04	-.07	-.03	.03
	N	215	215	215	215	215	215
Collection access: Digitally via a computer	*r*	.13	.09	.24**	.08	.07	.09
	N	216	216	216	216	216	216
Collection access: Digitally via a mobile device	*r*	.14*	.13	.14*	.19**	.11	.04
	N	215	215	215	215	215	215
Collection access: From an internet site	*r*	.02	.00	.12	.01	.07	.08
	N	215	215	215	215	215	215
Collection access: From a Cloud Source	*r*	.02	.10	.17*	.01	.03	.12
	N	216	216	216	216	216	216
Selection method: Selecting a specific Artist/	*r*	-.05	.04	.00	-.05	.04	.01
Album/ Song	*N*	216	216	216	216	216	216
Selection method: Playlist (yours or someone	*r*	.08	.13	-.01	.13	.19**	.01
else's)	*N*	216	216	216	216	216	216
Selection method: Random/ Shuffle	*r*	.03	.12	-.01	.14*	.16*	-.05
	N	216	216	216	216	216	216
Selection method: Other (internet radio, radio, etc.)	*r*	.09	.02	.03	.09	.06	.04
	N	216	216	216	216	216	216

Openness	*r*	-.05	-.03	-.06	-.05	.00	-.09
	N	215	215	215	215	215	215
Conscientiousness	*r*	.06	-.05	.02	.04	-.04	-.01
	N	215	215	215	215	215	215
Extraversion	*r*	-.01	-.06	.04	.00	-.05	-.02
	N	214	214	214	214	214	214
Agreeableness	*r*	.09	.08	.01	.06	.08	.02
	N	215	215	215	215	215	215
Neuroticism	*r*	-.07	-.11	.04	.02	-.06	.04
	N	214	214	214	214	214	214
Music-technology identity score	*r*	.04	.02	.07	.11	.13	.05
	N	215	215	215	215	215	215
How often do you find yourself in the situation you	*r*	-.10	-.22**	-.09	-.04	-.08	-.05
were just in?	*N*	216	216	216	216	216	216
Familiarity rating	*r*	.60***	.30***	.35***	.39***	.21**	.31***
	N	215	215	215	215	215	215

Note. Sex was coded as 1 = *females,* 2 = *males*; and possessing a university qualification was coded as 1 = *no*, 2 = *yes*.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5.4.

GLMM Analyses Predicting Pleasure, Arousal, and Dominance Responses Concerning the Music

Predictor variable	Music pleasure rating (N = 214)		Music arousal rating (N = 215)		Music dominance rating (N = 214)	
	F	η_p^2	*F*	η_p^2	*F*	η_p^2
Technology importance rating	NA		NA		*F* (1, 202) = 2.42, *p* = .121	.012
Collection access: Digitally via a computer	NA		NA		*F* (1, 202) = 7.89, *p* < .01	.038
Collection access: Digitally via a mobile device	*F* (1, 205) = 1.96, *p* = .164	.009	NA		*F* (1, 202) = 0.23, *p* = .634	.001
Collection access: From a Cloud Source	NA		NA		*F* (1, 202) = 2.62, *p* = .107	.013
Novelty rating	*F* (1, 205) = 0.23, *p* = .629	.001	*F* (1, 207) = 3.34, *p* = .069	.016	*F* (1, 202) = 10.04, *p* < .01	.047
Music familiarity rating	*F* (1, 205) = 48.98, *p* < .001	.193	*F* (1, 207) = 22.45, *p* < .001	.098	*F* (1, 202) = 2.30, *p* = .131	.011
Music type	*F* (1, 205) = 57.99, *p* < .001	.221	*F* (1, 207) = 15.73, *p* < .001	.071	*F* (1, 202) = 153.51, *p* < .001	.432
Location	*F* (2, 205) = 4.70, *p* = .010	.044	*F* (2, 207) = 2.90, *p* = .057	.027	*F* (2, 202) = 1.10, *p* = .334	.011
Music type x location interaction	*F* (2, 205) = 1.83, *p* = 164	.018	*F* (2, 207) = 14.79, *p* < .001	.125	*F* (2, 202) = 0.36, *p* = .697	.004

5.2.2.1 Liking ratings assigned to the music. One background variable, the mobile device access rating, was retained for the GLMM analysis concerning predictors of ratings of liking for the music. The GLMM analysis indicated that there existed significant main effects for music familiarity, music type, and location (see Tables 5.4 and 5.5). Contrary to H3a, the music type by location interaction was non-significant. The music familiarity rating was positively related to liking for the music. The main effect for location supports H3b: means indicate that the music heard in the lab was liked most followed by that heard on public transport and then the gym. Post-hoc pairwise comparisons reveal a significant difference such that music was liked significantly more in the laboratory than at the gym ($\beta = 0.53$ [0.16, 0.88], t (205) = 3.03, $p < .01$, $\eta^2 = .043$). The pairwise comparisons between the laboratory and public transportation as well as between public transportation and the gym were non-significant ($\beta = 0.15$ [-0.24, 0.54], t (205) = 0.77, $p = .442$, $\eta^2 = .003$ and $\beta = 0.38$ [-0.02, 0.79], t (205) = 1.86, $p = .064$, $\eta^2 = .017$ respectively). In this experiment, the laboratory, which does not represent a likely everyday setting, presented the listening task as the focused activity: there were no distractions and the participants were asked to do nothing else while listening to the music. The finding also stresses the importance of considering the context in everyday listening.

With regard to music type, confirming H3d, the means and significant pairwise contrast indicate that personal music was liked more than the experimenter-provided music ($\beta = 1.32$ [0.98, 1.66], t (205) = 7.62, $p < .001$, $\eta^2 = .220$). Not only does this support previous research (e.g., Liljeström, Juslin, & Västfjäll, 2012), it is also consistent with the finding concerning H2, which indicated a positive relationship between pleasure and dominance in music listening.

Table 5.5.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Music Pleasure Ratings (N = 214)

Main effect	Variable	Mean	*SE*	95% CI
Location	In the laboratory	5.91	0.11	[5.69, 6.13]
	On public transportation	5.76	0.16	[5.45, 6.07]
	At the gym	5.38	0.13	[5.12, 5.64]
Music type	Personal	6.34	0.08	[6.18, 6.50]

	Experimenter-provided	5.02	0.14	[4.74, 5.30]

Note. SE = standard error; *CI* = confidence interval. Continuous predictors were fixed at the following values: Mobile device access = 6.00, Familiarity rating = 5.98, Novelty rating = 4.66.

5.2.2.2 Arousal ratings assigned to the music. No individual difference variables were significantly correlated with the arousal rating (Table 5.3), and so they were not included in the associated GLMM analysis, which was significant. There was a significant main effect for music familiarity rating, which was positively related to arousal ratings (see Tables 5.4 and 5.6).

Supporting H3a, the interaction between music type and location was significant. The pattern of significant contrasts demonstrates that the experimenter-provided music was rated significantly more arousing than personally chosen music in both the laboratory and public transportation settings (β = -1.30 [-1.78, -0.83], t (207) = -5.40, $p < .001$, $\eta^2 = .124$ and β = -0.95 [-1.54, -3.17], t (207) = -3.17, $p < .01$, $\eta^2 = .046$ respectively). For music experienced at the gym, however, there was no significant difference in arousal ratings dependent on music type (β = 0.43 [-0.04, 0.90], t (207) = 1.80, $p = .073$, $\eta^2 = .015$). Thus, the pattern indicates that the music people would personally select for listening while sat in a quiet room or while commuting on public transportation is less arousing than that chosen for the gym. Listening to highly arousing music while exercising is consistent with past research (e.g., Chapter 2 and 3) and indicative of arousal-polarizing listening strategies (see the high means for the music at the gym in Table 5.6).

Table 5.6.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Music Arousal Ratings (N = 215)

Music type	Location	Mean	*SE*	95% CI
Personal	In the laboratory	4.58	0.19	[4.22, 4.95]
	On public transportation	4.57	0.22	[4.14, 4.99]
	At the gym	5.70	0.17	[5.38, 6.03]
Experimenter-provided	In the laboratory	5.88	0.16	[5.57, 6.20]

On public transportation	5.52	0.21	[5.11, 5.93]
At the gym	5.27	0.17	[4.94, 5.60]

Note. *SE* = standard error; *CI* = confidence interval. Continuous predictors were fixed at the following values: Familiarity rating = 5.98, Novelty rating = 4.66.

5.2.2.3 Dominance ratings assigned to the music. The technology importance rating, computer access rating, mobile device access rating, and cloud access rating were all entered as covariates in the GLMM analysis concerning music dominance ratings (operationalized as how much control a person felt he/she had over the music listened to). The main effects concerning the computer access rating, novelty rating, and music type were statistically significant (location and the music type by location interaction were non-significant; see Tables 5.4 and 5.7). Accessing music via the computer, one of the individual difference control variables, was positively related to dominance ratings. These individuals, who frequently use computer technology to access music, clearly experience a greater degree of dominance over their listening tat extends into situations in which they access music via other methods. With regard to how often the participants found themselves listening to music in that particular situation (the "novelty" rating), the negative relationship indicated that being in that situation more often was related to feeling less control over the music. Perhaps with repeated exposure to a situation, one's feelings of dominance wane. This is a relationship that deserves further research: familiarity with one's surroundings/the listening context may be relevant in explaining the role of control in everyday listening.

H3c was not supported, as the location main effect was non-significant. As hypothesized by 3He, self-selected music was associated with significantly higher dominance ratings than the experimenter-provided music (β = 3.08 [2.59, 3.57], t (202) = 12.39, $p < .001$, $\eta^2 = .423$). This demonstrates that feeling control over music listening is, indeed, captured by Mehrabian and Russell's dominance domain.

Table 5.7.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Music Dominance Ratings (N = 214)

Main effect	Variable	Mean	*SE*	95% CI
Music type	Personal	5.86	0.14	[5.58, 6.14]
	Experimenter-provided	2.78	0.18	[2.42, 3.14]

Note. *SE* = standard error; *CI* = confidence interval. Continuous predictors were fixed at the following values: Technology importance rating = 6.01, Computer access = 5.48, Mobile device access = 6.00, Cloud access = 2.97, Familiarity rating = 5.98, Novelty rating = 4.66.

5.2.3 Episodic ratings.

Similar to the analyses concerning the response to the music, three GLMM analyses (α = .017) addressed H4a-f regarding how individuals perceived the overall episode in terms of pleasure, arousal, and dominance. Again, the control variables were entered into the analyses as predictor variables based on significant bivariate correlations between the control variable in question and the outcome variable (see Table 5.3). Furthermore, the music pleasure, music arousal, music dominance, music familiarity rating, novelty rating, music type, location, and music type by location interaction were also entered as predictor variables.

Table 5.8.

GLMM Analyses Predicting Participants' Episodic Ratings of Pleasure, Arousal, and Dominance

Variable	Overall pleasure rating (N = 225)		Overall arousal rating (N = 226)		Overall dominance rating (N = 226)	
	F	η_p^2	*F*	η_p^2	*F*	η_p^2
Technology importance rating	*F* (1, 211) = 2.66, *p* = .104	.012	NA		NA	
Collection access: Digitally via a computer	*F* (1, 211) = 0.52, *p* = .471	.002	NA		NA	
Selection method: Playlist (yours or someone else's)	NA		*F* (1, 213) = 1.23, *p* = .269		NA	
Selection method: Random/ Shuffle	*F* (1, 211) = 3.52, *p* = .062	.016	*F* (1, 213) = 2.74, *p* = .099	.013	NA	
Novelty rating	*F* (1, 211) = 0.24, *p* = .625	.001	*F* (1, 213) = 0.54, *p* = .464	.003	*F* (1, 215) = 0.15, *p* = .704	.001
Music familiarity rating	*F* (1, 211) = 0.16, *p* = .686	.001	*F* (1, 213) = 0.19, *p* = 660	.001	*F* (1, 215) = 2.50, *p* = .115	.011
Music pleasure rating	*F* (1, 211) = 38.64, *p* < .001	.155	*F* (1, 213) = 15.11, *p* < 0.001	.066	*F* (1, 215) = 0.23, *p* = .635	.001
Music arousal rating	*F* (1, 211) = 0.45, *p* = .501	.002	*F* (1, 213) = 37.12, *p* < 0.001	.148	*F* (1, 215) = 0.00, *p* = .977	.000

Music dominance rating	F (1, 211) = 1.01, p = .316	.005	F (1, 213) = 0.41, p = .525	.002	F (1, 215) = 133.79, p < .001	.384
Music type	F (1, 211) = 4.43, p < .05	.021	F (1, 213) = 12.01, p < .01	.053	F (1, 215) = 0.74, p = .392	.003
Location	F (2, 211) = 3.21, p < .05	.030	F (2, 213) = 10.56, p < 0.01	.090	F (2, 215) = 6.51, p < .01	.057
Music type x location interaction	F (2, 211) = 5.58, p < .01	.050	F (2, 213) = 2.19, p = .114	.020	F (2, 215) = 0.37, p = .688	.003

5.2.3.1 Episodic pleasure ratings. Technology importance rating, accessing music by a computer, and selecting music via shuffle were included as control variables (see Table 3). The interaction between music type and location was significant, and there was only one additional significant main effect for the music pleasure rating (see Tables 5.8 and 5.9). Confirming H4d, the main effect for the music-related pleasure rating indicates that liking the music is positively associated to one's overall experience in terms of pleasure.

The significant interaction between music type and location relates to both H4a and H4c, which concerned the influence of the location and the music on one's episodic pleasure rating. The pairwise comparisons revealed that when in the laboratory, participants who listened to the experimenter-provided music rated their experience in terms of pleasure as significantly higher than those who listened to their own music (β = -1.03 [-1.58, -0.48], t (211) = -3.69, $p < .001$, $\eta^2 = .061$). However, participants' overall ratings of episodic pleasure did not differ based on whether the music was self-selected or experimenter-provided in the other two locations (on public transportation: β = -0.05 [-0.70, 0.59], t (211) = -0.16, $p = .877$, $\eta^2 = .000$; and at the gym: β = -0.28 [-0.77, 0.21], t (211) = -1.13, $p = .260$, $\eta^2 = .006$). Thus, as there was a difference between locations, H4a is supported: however, the pattern of results for the laboratory displays the opposite from what was predicted in H4c concerning music type.

Table 5.9.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Overall Pleasure Ratings (N = 225)

Music type	Location	Mean	*SE*	95% CI
Personal	In the laboratory	4.68	0.18	[4.33, 5.03]
	On public transportation	5.34	0.20	[4.95, 5.73]
	At the gym	5.42	0.15	[5.12, 5.72]
Experimenter-provided	In the laboratory	5.70	0.16	[5.38, 6.02]
	On public transportation	5.39	0.22	[4.96, 5.82]
	At the gym	5.70	0.17	[5.36, 6.04]

Note. *SE* = standard error; *CI* = confidence interval. Continuous predictors were fixed at the following values: Technology hours = 7.69, Computer access = 5.98, Select via shuffle = 4.54, Music pleasure rating = 5.72, Music arousal rating = 5.22, Music dominance rating = 4.46, Familiarity rating = 5.93, Novelty rating = 4.67.

5.2.3.2 Episodic arousal ratings. Two selection habits, listening via playlists and shuffle, were retained as control variables. The GLMM analysis gave rise to four significant main effects (see Tables 5.8 and 5.10). Both the music pleasure and music arousal ratings were associated positively with the episodic arousal ratings. This evidence supports H4e, as music arousal judgments were positively related to overall arousal, although so also was how much the music was liked. That arousal evoked by the music was related positively to overall episodic arousal further supports the notion that participants employed arousal-polarization listening strategies: if listeners are using music to align with arousal-polarization goals, it follows that their arousal rating of both the music and the episode will correspond.

While the music type by location interaction was non-significant, each of music type and location gave rise to a significant main effect. Regarding location (H4a), the pairwise comparisons revealed that episodic arousal ratings were significantly higher when at the gym compared to both the laboratory (β = -0.74 [-1.06, -0.42], t (213) = -4.57, $p < .001$, $\eta^2 = .089$) and public transportation (β = -0.46 [-0.78, -0.14], t (213) = -2.82, $p < .01$, $\eta^2 = .036$). The comparison between the laboratory and public transportation was non significant (β = -0.28 [-0.60, 0.03], t (213) = -1.79, $p = .080$, $\eta^2 = .015$). With regard to the significant main effect for music type, the pairwise comparison indicates that the experimenter-provided music was associated with higher overall arousal ratings (β = -0.81 [-1.27, -0.35], t (213) = -3.47, $p < .01$, $\eta^2 = .053$.

Table 5.10.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Overall Arousal Ratings (N = 226)

Main effect	Variable	Mean	*SE*	95% CI
Location	In the laboratory	4.71	0.11	[4.49, 4.94]

	On public transportation	5.00	0.12	[4.77, 5.23]
	At the gym	5.46	0.11	[5.25, 5.67]
Music type	Personal	4.65	0.15	[4.37, 4.94]
	Experimenter-provided	5.46	0.12	[5.23, 5.69]

Note. *SE* = standard error; *CI* = confidence interval. Continuous predictors were fixed at the following values: Select via playlists = 4.89, Select via shuffle = 4.54, Music pleasure rating = 5.72, Music arousal rating = 5.22; Music dominance rating = 4.46, Familiarity rating = 5.93, Novelty rating = 4.67.

5.2.3.3 Episodic dominance ratings. Given the absence of significant correlations, no individual difference control variables were entered in the GLMM analysis concerning overall dominance ratings (operationalized on the questionnaire as degree of control participants felt over the entire episode). The analysis indicated two significant main effects concerning the music dominance rating and the location respectively (see Table 5.8 and 5.11). As H4f hypothesized, higher dominance ratings for the music were associated with higher judgments of dominance for the episode overall. It was also hypothesized (H4b) that overall dominance ratings would be related to whether the music was self-selected or experimenter-provided: however, music type was non-significant. Thus, while participants' judgments concerning how much control they had over the music was important, control is likely a more nuanced concept than simply whether or not the music came from one's personal collection or someone else's. As discussed when considering both devices and selection behaviors involved in listening to music, control over one's listening is complex in everyday settings (Chapter 2).

The pairwise comparisons regarding the main effect for location (H4a) showed that, as might be expected, episodic dominance ratings were significantly higher for the gym when contrasted with both the laboratory (β = -0.68 [-1.08, -0.29], t (215) = -3.42, $p < .01$, $\eta^2 = .052$) and public transportation (β = -0.55 [-0.95, -0.15], t (215) = -2.68, $p < .01$, $\eta^2 = .032$): the contrast between the laboratory and public transportation was non-significant (β = -0.13 [-0.54, 0.27], t (215) = -0.65, p = .514, $\eta^2 = .001$).

Table 5.11.

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Overall Dominance Ratings (N = 226)

Variable	Mean	*SE*	95% CI
In the laboratory	4.20	0.15	[3.91, 4.49]
On public transportation	4.33	0.14	[4.06, 4.61]
At the gym	4.88	0.14	[4.61, 5.15]

Note. *SE* = standard error; *CI* = confidence interval. Continuous predictors were fixed at the following values: Music pleasure rating = 5.72, Music arousal rating = 5.22, Music dominance rating = 4.46, Familiarity rating = 5.93, Novelty rating = 4.67.

5.2.4 Theoretical implications.

The present results can be interpreted in terms of Mehrabian and Russell's PAD model. Firstly, while prior research has debated the importance of the dominance domain, the present results confirm that it is a factor that affects an individual's response to both the music and the situation overall. Importantly, self-selected music was associated with significantly higher dominance ratings concerning the music than was the experimenter-provided music, which confirms the conceptualization of dominance in the context of musical behaviors as control over that music. However, while the music dominance rating was positively related to a person's feelings of dominance overall, music type was not. This suggests that control, in terms of music listening, is related to how one experiences situations, but that it is likely more complex than simply listening to one's own music versus that provided by someone else. As suggested by previous research, one particular source of this more complex evaluation of having control over music might be the means by which the music is accessed and selected (Krause, North, & Hewitt, 2013, 2014). Moreover, it is possible that any feeling of control is intertwined with an individual's perception of how the music *fits* the listening situation. For instance, individuals may experience positive consequences (such as maintaining arousal levels and motivation to exercise via highly arousing music heard at the gym) and

judge the music as appropriate/fitting to the situation without necessarily personally choosing the music heard.

Secondly, the findings demonstrate that feelings of control relate to one's liking for the music, such that participants preferred their own music to that provided by someone else; and is it interesting that pleasure and dominance ratings were positively related also. As such, the PAD domains can be used to understand a person's response to contextualized listening. Of course these theoretical predictions deserve future research attention so that they might be verified and refined.

5.3 Conclusion

The main contribution of the present experiment is that the results are based on experimenter manipulation of both the location in which participants listened to music and whether the music was self-selected or experimenter-provided. The work presented in Chapter 2 established that more positive responses to music are associated with devices and selection methods involving increased user input (i.e., mobile mp3 players). Consequently, as an additional control, all participants in the present research used their personal mobile listening devices with headphones to listen to playlists. The results demonstrate that both location and music type had a clear impact on people's responses to the music (and to their experience overall) regarding all three PAD dimensions.

In particular, there was a positive relationship between pleasure and dominance, consistent with Mehrabian and Russell's model and earlier findings; and data concerning pleasure and arousal suggest that listeners use arousal-polarization strategies in everyday music listening, also consistent with previous research. Whether the music was self-selected or experimenter-provided affected how much people liked what they heard, how arousing they considered the music to be, and how much control they felt they had over the music. Additionally, the familiarity of the music was related to both ratings of pleasure and arousal. Furthermore, when considering people's overall judgments of their experience in terms of the PAD domains, the location was an important influence on how the music was experienced. Specifically, liking the music was related to how pleasurable the experience was in general (and to how arousing it was); the extent to which the

music was arousing was related to the extent to which the overall setting was arousing; and feelings of control over the music were related to participants' judgments of their degree of dominance over the setting in general.

Importantly, by adopting this experimental approach, this experiment demonstrates that Mehrabian and Russell's PAD model of environmental psychology is a useful framework for understanding everyday contextualized music listening. While previous work has focused on the influence of pleasure and arousal, the current results indicate that the role of dominance, the third dimension within the model, cannot be ignored. Specifically, the current evidence supports the contention that dominance can be operationalized as control/choice concerning the music.

This study is not without its limitations, however. While three locations were included, the gym and public transportation represent only two of the many situations in which people experience music in everyday life. Moreover, with regard to these two locations, participants were asked to complete the study when they next happened to be in that particular environment: without the experimenter present, it is unclear how well participants adhered to the instructions. Additionally, as the present research utilized playlists of 15 minutes duration, it is unclear how longer listening episodes might be experienced. Diary or other longitudinal study designs could also provide more detailed evidence concerning people's responses in terms of the PAD model. In addition, the design of this experiment required the use of a restricted sample of Australian university student gym members. Therefore, it would be beneficial to replicate this experiment using different samples. Nonetheless, the findings support the application of Mehrabian and Russell's PAD model to everyday music listening emphasizing the importance of considering dominance, as well as pleasure and arousal, when explaining everyday music listening.

Chapter 6: Season-Based Playlist Preferences[5]

Chapters 2-5 considered contextualized listening in terms of the listener's immediate environment, thereby focusing on effects at lower levels of Doise's hierarchy. However, we might also expect corresponding effects to be identified at higher levels of the hierarchy as well. Thus, the present research considered time of year as one example of a broader, macro-level contextual element of listening.

6.1 Introduction

Doise (1986) proposed that there are four levels of analysis in social psychology, namely intra-individual, inter-individual, socio-positional, and ideological. At the lowest level, the intra-individual level, research considers how people organize their environment in terms of cognitive, perceptual, and biological processes. The inter-individual level is concerned with the processes between people in a given situation. Also concerned with the relationships between people, the socio-positional level considers effects arising from differences between people's social position, such as group membership or with regard to social institutions, including schools or communities. The broadest, ideological, level considers broad cultural beliefs, representations, and norms, as well as other macro-level factors.

Previous research on contextualized music listening has considered micro-level influences at the intra-individual level (such as Rentfrow & Gosling's (2003) work on personality correlates of musical taste), the inter-individual level (such as Radocy's (1975) frequently-cited work on conformity in musical preference), and small scale social-positional levels (such as North & Hargreaves's (1996c) work on

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[5] *Note*. The material used in this chapter also appears in a manuscript submitted for publication, currently under review. A co-author statement is located in Appendix B.

Krause, A. E., & North, A. C. (2014). 'Tis the season: Spring versus autumn playlist preferences. *Manuscript submitted for publication*.

situational determinants of musical preference); and Hargreaves and North's (1997) review is explicitly organized around this structure. However, there is very little work at the broadest of Doise's levels concerning macro-level influences on and correlates of musical preference. Perhaps the best-known example of this is provided by Zullow (1991). He considered the best-selling pop songs from 1955 to 1989 in the U.S., finding that the levels of pessimistic rumination in the lyrics could predict changes in consumer optimism, which in turn could predict Gross National Product growth. Crain and Tollison (1997) similarly considered the 912 songs that reached number one in Billboard Magazine's rankings from 1940 to 1988. By studying these songs in terms of their tempo, duration, and the number of weeks that each song spent at number one, they discovered evidence tying economic forces to changes in the internal structure of successful songs. For instance, the length of songs was positively related to earnings and the dominance of a small number of artists in occupying the number 1 position, while negatively related to military deaths, prime interest rate, and advertising expenditure. Moreover, the tempo of these popular songs was positively related to the number of military deaths and the "misery index" (i.e., unemployment rate plus inflation rate).

Researchers in the music information retrieval field have begun to suggest that recommender systems take into account such broad contextual features, such as time (e.g., Herrera, Resa, & Sordo, 2010; C. H. Park & Kahng, 2010), but perhaps most interesting findings in this field are those indications that musical taste is related to variations in season. For instance, there is evidence from online listening logs that indicate different listening patterns based on the seasons (Baur, Büttgen, & Butz, 2012). Similarly, Pettijohn, Williams, and Carter (2010) considered how the seasons relate to preferences for four types of music genre, finding that people preferred to listen to reflexive and complex genres more after thinking about autumn and winter while they preferred energetic and rhythmic genres when primed to think about spring and summer.

As it is clear from this brief review, the existing evidence is limited in two crucial ways. Firstly, there is a dearth of evidence concerning the possible relationship between musical taste and macro-level variables. Secondly, the research that has been carried out lacks a coherent theoretical background,

although there is some suggestion that seasons may be one macro-level variable relating to musical taste.

The literature on seasonal correlates of mood and behavior provides some more specific suggestions concerning the nature of any seasonal variations in musical taste that may exist, and the kind of theoretical processes that may underlie these. Research in finance has suggested that weather may affect stock trading and returns (Goetzmann & Zhu, 2005; Hirshleifer & Shumway, 2003; Saunders, 1993), and limited marketing research has considered the influence of weather variables on consumer spending (Levy & Galili, 2008; Murray, Di Muro, Finn, & Popkowski Leszczyc, 2010; Parker & Tavassoli, 2000; Parsons, 2001). These effects have been attributed to the positive influence of the weather on people's moods. For instance, Hirshleifer and Shumway (2003) remark that, while effects may be subtle, sunny days appear to positively influence the moods of stock traders, and, in turn, their moods affect prices. Levy and Galili (2008) were able to identify three subgroups of investors (male, young, and poor) who were more likely to be net buyers of equity on cloudy days, which they explain in terms of the association between poor mood and increases in gambling activity (which disproportionately affect male, young, and low-income individuals). With increased exposure to sunlight, Murray et al. (2010) found that negative affect decreased and consumer spending increased. One possible interpretation of these findings is that warmer, more clement weather is associated with a greater degree of activity and positivity in mood and behavior, whereas colder, less clement weather is associated with less active and instead reflective mood and behavior.

Violence and criminal behavior have also been linked to weather in a similar manner (Anderson, 2001; Cohn, 1990; Hipp, Bauer, Curran, & Bollen, 2004; Jacob, Lefgren, & Moretti, 2007; Schory, Piecznski, Nair, & El-Mallakh, 2003): one possible explanation of this, the heat hypothesis, states that hot temperatures can increase aggressive motives and behaviors (Anderson, 2001) and violent crime (Cohn, 1990) due to increased feelings of hostility and indirectly increasing aggressive thoughts, both indicators of increased activity. The simplest underlying idea suggests that this is due to "crankiness" (Anderson, 2001)—that heat makes people uncomfortable. Consequently, the heat hypothesis, also demonstrates that warmer weather leads to

people being more active (albeit in a different manner), while cooler weather is associated with less active, calm behavior.

However, perhaps the strongest evidence for a relationship between weather and behavior is provided by work linking weather directly to mood (Harmatz et al., 2000; Howarth & Hoffman, 1984; Sanders & Brizzolara, 1982). Much of this work has been carried out in relation to mood disorders, and seasonal affective disorder in particular (e.g., Ohtani et al., 2006; Palchikov, Zolotarev, Danilenko, & Putilov, 1997; Suhail & Cochrane, 1998) in which sufferers most commonly experience symptoms of depression during autumn and winter, with remission to normal mood (or sometimes mania) during spring and summer (Lam et al., 2006), as a consequence of light deprivation during winter (e.g., Palchikov et al., 1997).
In conjunction, this evidence suggests that during warmer months people may prefer more active music (whether this be positively-valenced (i.e., positive affect) as implied by the literature on financial behavior and seasonal affective disorder; or negatively-valenced (i.e., negative affect) as indicated by the literature on violence and crime), whereas in colder months they might prefer calmer, more reflective music. If we extrapolate from this to musical taste, we might expect therefore that in autumn and winter, people will prefer slower, sad, and generally less active music while in spring people may gravitate to invigorating and generally active music that may be either happier or more aggressive in nature. An alternative possibility, however, would suggest that people might prefer music to moderate strong moods. Panic attacks have been shown to peak in August (summer) apparently due to the hotter weather (Ohtani et al., 2006), so it may be that people would prefer quiet, relaxing music during that time that would moderate their greater activity of their mood.

To test the nature of any seasonal correlates of music taste, we developed a questionnaire to consider people's preferences for constructing music playlists. Playlists, in general, represent the technological advancement to a mix tape or mix CD, as they are created by listeners choosing the songs as well as the order the songs are presented. As of 2013, more than 1.5 billion playlists have been created for use on the online listening service Spotify (www.spotify.com/us/2013; http://press.spotify.com/au/information/) alone. As such the concept of listening to music via playlists is understood in the general population. Based on the findings

reviewed above, we hypothesized that participants would prefer music in Spring that could be characterized as energetic, and prefer music in Autumn that could be characterized as reflective.

6.2 Method

One hundred university students aged 18-25 years at a Scottish university participated voluntarily and received no compensation. Participants were asked to complete the questionnaire over a two-day period in March of stable, typical weather. A decision was taken at an early stage not to collect actual playlists from participants during spring and autumn respectively as this would introduce biases due to the evolving nature of the musical tastes of the individuals concerned, variations in musical fashions and music industry marketing over the extended period in question, and the likely attrition rate in the sample. Using a repeated measures design, the questionnaire consisted of two parts, with directions informing participants that the research concerned the creation of music playlists for respectively "Autumn" and "Spring." Printed copies of the questionnaire were counter-balanced, so that an equal number of participants completed the survey with the *Autumn* questions listed first and the *Spring* questions first.

Respondents were asked to rate how well 24 characteristics would describe their selections for each playlist using a seven-point scale (1 = *not at all*, 7 = *extremely*). The 24 characteristics were taken from North and Hargreaves' (1996c) list (although three of their descriptors, which specified three genres that are arguably ambiguous, were not included). These characteristics were familiar, sad, strong rhythm, attention-grabbing, can dance vigorously to it, happy, sensual, lilting, beautiful, natural/fresh, expresses profound emotions, sentimental, nostalgic, sophisticated/classy, exotic, quiet, loud, romantic, moody, inspiring/majestic, relaxing/peaceful, invigorating, exciting/festive, strong ethnic roots. North and Hargreaves' (1996c) principal components analysis of their participants' ratings showed that an "Arousal" factor explained the greatest proportion of the variance (28%), such that the adjectives are appropriate for testing the current hypothesis. Participants were approached by the researcher in common areas of the campus (e.g., cafeteria, student lounge areas) and asked to complete the questionnaire at that point in time.

6.3 Results and Discussion

Two separate principal component analyses were conducted on the participants' ratings of the 24 musical characteristics for the Spring and Autumn playlists respectively. The rotated principal components solution for both analyses yielded four factors with eigenvalues greater than two, with screeplots indicating that this seemed a prudent cut-off point. For the Spring ratings, the four factors accounted for 50.97% of the variance, while the four factors accounted for 41.05% of the variance for the Autumn ratings. The loadings are presented in Table 6.1. This shows that the Spring and Autumn results shared one factor, namely rhythmic. However, the remaining Spring factors were labeled passionate, revitalizing, and invigorating respectively. In contrast, the remaining Autumn factors were labeled sophisticated, tranquil, and poetic respectively. These findings suggest that participants apparently conceptualized music differently when considering Spring versus Autumn playlists. In Spring, they apparently focused on active, dynamic factors when conceptualizing music, whereas in Autumn they apparently focused on much more reflective and complex qualities.

Paired samples t-tests ($\alpha = .002$) compared the *Autumn* and *Spring* ratings for each of the 24 characteristics to attempt to identify variations between Spring and Autumn in ratings of the characteristics that music should possess. The results, shown in Table 6.2, demonstrate that six characteristics were more indicative of Spring (invigorating, happy, natural/fresh, exotic, can dance vigorously to it, and exciting); while four were more indicative of Autumn (sad, quiet, nostalgic, and moody). These significant differences reiterate the results of the principal components analyses that distinguished Spring song characteristics from Autumn song characteristics. Consequently, the results provide evidence that listening preferences differed between Autumn and Spring in a manner consistent with previous work concerning seasonal variations in attitudes and behavior. The more active nature of the higher rated Spring characteristics were positively- rather than negatively-valenced.

Table 6.1.

Loadings for the Musical Characteristics for 'Spring' and 'Autumn' Playlists

	Spring				Autumn			
Musical characteristic	Factor 1: Passionate	Factor 2: Rhythmic	Factor 3: Revitalizing	Factor 4: Invigorating	Factor 1: Sophisticated	Factor 2: Tranquil	Factor 3: Rhythmic	Factor 4: Poetic
Romantic	0.77				0.72			
Sentimental	0.73				0.81			
Expresses profound emotions	0.64							0.50
Sensual	0.60		0.34		0.41			0.73
Strong ethnic roots	0.57					-0.59	0.43	
Exotic	0.55							
Nostalgic	0.54							
Moody	0.53	-0.36				-0.46	-0.38	
Sad	0.46					-0.59		
Sophisticated/ Classy	0.43		0.36	-0.30	0.73			
Lilting	0.40			0.51				0.84
Relaxing/ Peaceful	0.39			-0.52	0.32	0.44		0.32
Strong rhythm		0.80					0.63	0.35
Can dance vigorously to it		0.78					0.78	
Exciting/ Festive		0.73					0.77	
Loud		0.52		0.52			0.35	
Attention-grabbing		0.47		0.53				
Quiet		-0.54		-0.31				
Natural/ Fresh			0.82		0.35	0.54		

Beautiful			0.79		0.57	0.40		
Inspiring/ Majestic			0.66		0.59			
Happy			0.59			0.66		
Invigorating				0.57				
Familiar				0.50				
Eigen value	4.03	3.26	2.87	2.08	3.00	2.35	2.35	2.15
% of variance	16.79	13.58	11.95	8.66	12.50	9.80	9.80	8.95

Note. Loadings < .3 are suppressed.

Table 6.2.

Means, Standard Deviations, and Paired t-test Results (Spring vs. Autumn Ratings) for the Musical Characteristics

Characteristic	Spring		Autumn		
	M	*SD*	*M*	*SD*	*t*-Test result
Familiar	4.54	1.37	4.52	1.37	*t* (97) = 0.14
Sad	1.96	1.14	4.01	4.34	*t* (96) = -4.63***
Attention-grabbing	4.34	1.49	4.28	6.26	*t* (96) = 0.06
Invigorating	4.93	1.49	3.66	1.34	*t* (96) = 6.76***
Happy	5.81	1.19	4.25	1.49	*t* (97) = 9.03***
Beautiful	5.43	1.28	4.92	1.54	*t* (94) = 2.73**
Loud	4.19	1.40	3.55	1.62	*t* (97) = 3.13**
Inspiring	5.01	1.31	4.56	1.46	*t* (95) = 2.88**
Natural/ Fresh	5.42	1.44	4.62	1.59	*t* (97) = 4.44***
Sentimental	3.86	1.58	4.46	1.69	*t* (94) = -2.92**
Sophisticated	3.51	1.42	3.9	1.52	*t* (95) = -2.45*
Exotic	3.64	1.60	2.96	1.38	*t* (96) = 3.62***
Quiet	3.13	1.33	4.01	1.63	*t* (97) = -4.20***
Nostalgic	3.39	1.49	4.53	1.52	*t* (95) = -5.60***
Romantic	3.70	1.66	4.27	1.66	*t* (96) = -2.84**
Relaxing	4.34	1.71	4.82	1.69	*t* (92) = -2.02*
Moody	2.47	1.33	3.51	1.94	*t* (93) = -4.65***
Strong Ethnic Roots	2.73	1.56	2.70	1.55	*t* (96) = -0.06
Can dance vigorously to it	4.00	1.81	2.74	1.62	*t* (97) = 5.77***
Sensual	3.68	1.58	3.78	1.54	*t* (97) = -0.65
Lilting	3.41	1.36	3.6	1.34	*t* (92) = -1.48
Expresses profound emotions	3.87	1.55	4.42	1.48	*t* (95) = -2.93**
Exciting	4.73	1.36	3.91	1.55	*t* (97) = 4.15***
Strong rhythm	4.63	1.55	4.14	1.57	*t* (97) = 2.52*

Note. * p <.05, ** p< .01, *** p < .001.

6.4 Conclusion

Doise's (1986) hierarchy considers four different levels of analysis: intraindividual, interindividual, socio-positional, and ideological. While most social psychological research is focused at the intraindividual and interindividual levels, the current study demonstrates that people's listening preferences are related to contextual influences at the broadest level. In particular, listening preferences are related to seasonal variations, in a manner consistent with previous research concerning these. This research is not without limitations, most notably the use of a university student sample in a single climatic location. Yet, importantly, it provides evidence that broad contextual influences towards the top of Doise's hierarchy relate to musical taste.

Future research is well placed to continue to explore how listening is defined by such high-level social influences. A limitation of the present research (as well as that presented in Chapters 2-5) is that it employs predominantly survey-based data. In contrast, it would be interesting to investigate whether research that adopts an archival data collection method might yield similar types of findings. Such work may investigate seasonal and time-relevant music preferences cross-culturally and could make use of Billboard chart patterns and playlists already in existence. Any such work would also need to manage the inherent disadvantages in archival research concerning music, such as variations over time in musical fashions, radio station playlists, and the demographics of people who buy music as different times of the year. The present findings may also be of practical interest to the developers of online playlist recommendation systems and those working in music radio programming.

Section Two: Accessing and Selecting Music

Technological changes, and the numerous ways of accessing recorded music that have resulted, mean that the dearth of technology-related research concerning musical behavior is surprising. Even much of the research regarding the Internet has been descriptive (Goldsmith, 2001) and has not been carried out in the context of the various theories of consumption and consumer psychology that might reasonably be expected to shed light on the issue: there is a need to move beyond the identification of basic consumer typologies and market segmentation to instead understanding music consumption in terms of the acquisition/diffusion of new technologies (Goldsmith, 2001; Mick & Fournier, 1998).

Consumer psychology has considered the adoption and diffusion of technology via opinion leadership and innovativeness, with particular emphasis on marketing implications. While different technologies and individuals have been considered—such as mobile devices and mobile-commerce (Mahatanankoon, 2007), context aware services (Kwon, Choi, & Kim, 2007), hand held Internet devices (Bruner & Kumar, 2007), general information seeking websites (Chung & Tan, 2004), heavy Internet users (Assael, 2005), and gadget lovers (Bruner & Kumar, 2007)—research concerning specifically music technology is scarce. The greater number of ways in which people are able to access music means that it is important to account for such technology in our understanding of everyday musical behavior, and in particular to move from merely describing music usage in everyday life to explanations of the same based on consumer psychology and more general psychological theories.

Thus, Section 2 considers how music is accessed from a more detailed psychological perspective. This includes research focused on the relative extent to which demographic, technology use-related, and psychological variables can predict performing everyday listening practices, and in particular use of different listening devices (Chapter 7) and selection behaviors (Chapter 8).

Chapter 7: A Focus on Device Use[6]

Music is a means of defining one's identity (Hargreaves, Miell, & Macdonald, 2002; North & Hargreaves, 2003), both in terms of performing and listening (MacDonald et al., 2009), and also more specific behaviors, such as collecting music (Giles et al., 2007). Moreover, individuals believe that music preferences reveal information about personal qualities (Rentfrow & Gosling, 2003, 2006), and individuals make purchases partly to express themselves (Dittmar, 2008), in the same way that devices, such as mobile telephones, may be representative of identity (Craig, 2007). There is also some research concerning identity and technological intentions and adoption (Y. Lee, Lee, & Lee, 2006; Thorbjørsen, Pedersen, & Nysveen, 2007). This suggests the potential for research on identity in music technology usage (see e.g. North & Hargreaves, 2008; O'Hara & Brown, 2006).

Previous research has suggested that females had more positive attitudes towards music, whereas males were more positive towards and confident in using music technology (see review by O'Neill, 1997). Women have viewed men as more able to understand technology, such as the Internet, and have more negative attitudes towards computers (although opinions and attitudes change with greater use – Wasserman & Richmond-Abbott, 2005). Such sex differences in attitudes towards music and technology may impact the adoption of music technology. Similarly, younger individuals behave innovatively (Lambert-Pandraud & Laurent, 2010), and college students, in particular, are frequent early adopters (Tepper &

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[6] *Note*. The material used in this chapter also appears as Study 1 in a manuscript submitted for publication; a revised version is currently under review (for which co-author statements are located in Appendix B). Additionally the results of this study were presented at the 2013 Society for Music Perception and Cognition (SMPC) Conference in Toronto, Canada.

Krause, A. E., & North, A. C. (2014). Music listening in everyday life: Devices, selection methods, and digital technology. *Manuscript submitted for publication.*

Hargittai, 2009). Further, access may be related to country of residence, as North and Davidson (2013) provided evidence that the uses of music can vary by global region. In addition to demographic factors, we would also expect that innovativeness influences adoption of music technology. Innovative consumers are the first to buy a new product, are interested in and knowledgeable about the product, own more products, and talk to others about the product area (Goldsmith & Hofacker, 1991). Although there is a considerable literature on the subject, of particular relevance are studies showing that innovativeness moderates technology adoption (Agarwal & Prasad, 1998; Yi, Fiedler, & Park, 2006); that income, age, and innovativeness relate to the ownership of new consumer electronic products (Im, Bayus, & Mason, 2003); and that those classified as "tech hunters" (Lim & Lee, 2010) purchase more products.

Other research indicates the potential importance of a related variable, namely opinion leadership: this is the extent to which individuals share their information in the domain with other consumers, so that the latter regard the former as reliable guides. In two particularly relevant examples of this, Lyons and Henderson (2005) found that Internet opinion leaders had greater computer skills, were more involved, were more curious, had higher levels of self-perceived knowledge, spent more time online, and were early adopters; and Kang and Yoon (2008) found users who were more comfortable with the various operations of a device explored its functionality to the full. Also, attitudes towards products (e.g., Kulviwat, Bruner, & Al-Shuridah, 2009), playfulness (e.g., Bruner & Kumar, 2005; Mahatanankoon, 2007), and self-efficacy beliefs (e.g., Kwon et al., 2007) relate to technology adoption.

Two conclusions can be drawn from this brief review concerning music technology. Firstly, research has focused on the technology itself or variables directly related to consumption. Secondly, this notwithstanding, there are some clear indications that psychological variables, and individual differences in particular, play a role also, even though they have tended not to be the focus of much research. The potential importance of this second point becomes more apparent if we adopt a slightly different approach to the literature and instead attempt to identify individual pieces of research in which overtly psychological factors have been shown already to influence everyday uses of music technology.

For instance, Assael (2005) found that overtly considering lifestyle variables could lead to a better understanding of technology users than demographic factors alone. Similarly, research on music consumption (Chamorro-Premuzic et al., 2012) and entertainment preferences (Rentfrow, Goldberg, & Zilca, 2010) shows relationships involving personality and demographic factors; and more musically engaged participants identified more complex ways of categorizing and organizing their music collections and were more consciously aware of how they use music (Greasley, Lamont, & Sloboda, 2013; Heye & Lamont, 2010). Other studies have shown that different reasons for choosing to listen to music relate to psychological factors, such as personality (e.g., Chamorro-Premuzic & Furnham, 2007) and engagement (Greasley & Lamont, 2011; Greasley et al., 2013). Such findings are scarce, however, and moreover, we are not aware of any information concerning the impact of psychological variables on how individuals choose to access music.

7.1 Research Questions

The objective of this study was therefore to explore how participants access music and examine whether individual differences (namely, personality, identity, opinion leadership, innovativeness, and self-efficacy) relate to musical identity and the perception of the advantages associated with using various technologies to listen to music. Three research questions were addressed.

RQ1: Can technology behaviors and/or psychological variables predict differences in the extent and nature of music in an individual's identity?

RQ2: Can technology behaviors and/or psychological variables predict variations between individuals' evaluation of the advantages of differing listening devices?

RQ3: Does the extent to which one appreciates certain advantages of technology relate to use of different listening devices?

7.2 Method

7.2.1 Participants.

While 415 individuals took part, analyses used the data from the 342 individuals who resided in the U.S. and the U.K. (25.1% U.S., 74.9% U.K.). Country of

origin was included in the main analysis. 64.9% were female; age ranged from 16-72 years (*M* = 27.15, *Mdn* = 22); and 42.1% had a university qualification. Individuals were approached in person during a local arts festival and on a university campus. The questionnaire was also advertised online via the author's website, the university's student research participation program, and websites dedicated to listing online psychology research opportunities (e.g., http://www.socialpsychology.org). Mean responses to each variable were calculated separately for the paper- and web-based samples. The product-moment correlation between these two data sets was .96. Therefore, the two sets of data were pooled in subsequent analyses. Some current university students received participation credit, and the remaining individuals received no compensation.

7.2.2 Questionnaire.

Participants provided questionnaire data, using seven-point Likert scales (1 = *not at all*, 7 = *extremely*) where applicable. Participants rated separately the importance of technology and music in their lives (hereafter the "technology importance rating" and "music importance rating" respectively); how many hours they listened to music on an average day and how many hours they interacted with technology on an average day (as a measure of engagement); and stated the amount of minutes for which they used each of various technologies (e.g. radio) to listen to music on an average day. A series of specific individual difference measures then followed.

7.2.2.1 Personality. Langford's (2003) proxy scale for the big five was used because of its concise nature, and reliability in previous research (Langford, 2003; North, 2010). The scale requires participants to rate themselves on one seven-point scale for each of the five dimensions. Openness, conscientiousness, extroversion, agreeableness, and neuroticism are represented by "*uncreative-creative*," "*lazy-hard working*," "*shy-outgoing*," "*headstrong-gentle*," and "*nervous-at ease*" respectively.

7.2.2.2 Consumer psychology variables. Participants were presented with a list of 26 items drawn from the consumer psychology literature on attitudes towards and usage of digital technology. These concerned opinion leadership; individual playfulness; optimum stimulation level; computer self-efficacy and anxiety; perceived ease of use; perceived usefulness; and the behavioral intention to

continue using digital listening technology. Participants indicated the extent to which each of the 26 statements described themselves on a five-point scale, from 1 = *not at all* to 5 = *very well*. A full list of the statements is in Appendix O.

7.2.2.3 Identity. Again, the author-developed four statements asked participants to state respectively the extent to which each of "Music", "Music technology", "Technology", and "Cloud-based technology" "is central to my identity" on seven-point Likert scales (1 = *not at all*, 7 = *completely*).

7.2.2.4 Self-efficacy. Self-efficacy, by referring to one's belief in one's ability to perform tasks, is also referencing one's sense of competence (Spreitzer, 1995). Since self-efficacy measures require domain specificity for accuracy (Bandura, 1997), Spreitzer's (1995) scale was adapted for digital listening technology. The resulting measure required participants to mark agreement with three statements on a five-point Likert scale (1 = *not at all*, 5 = *completely*) for four different listening technologies: in the case of each of listening to music on a computer, using a mobile device, using the Internet, and using cloud technology, individuals responded with regard to whether they felt they were, "Confident about their ability," "Had mastered the skills necessary," and whether they, "Believed in their capabilities". The ratings were summed separately for each device, leading to four device-specific self-efficacy scores per participant.

7.2.2.5 Technology use. Respondents rated (from 1 = *never* to 7 = *always*) how often they accessed their music collection in five different ways (namely physical CDs, tapes, and records; digitally via a computer; a mobile device; an Internet source; and a cloud source); rated how much they would like to use each of those five ways (regardless of their confidence; 1 = *not at all* to 7 = *extremely*); and indicated specifically which of the five ways they used most often. Finally, participants rated the extent to which each of 12 candidates items was a potential advantage of the method of listening they used most often (from 1 = *not an advantage* at all to 7 = *very much an advantage*): these 12 items were, "Ease of use," "Storage size/ space," "Accessibility," "Familiarity," "Centralization of accessing one's music collection," "User control," "Latest technology," "Management ease," "Financial reasons," "Portability," and an "Other" option.

7.2.3 Procedure.

Individuals participated in one of two ways. People were approached in person to take part, and were given the printed survey to complete. Upon completion, the individuals were debriefed and thanked. Additionally, an electronic version was hosted on the author's research website. Individuals who participated electronically were directed to the questionnaire via a direct link in the online advertisements. Participants indicated their consent on the study information webpage before being guided through the questionnaire via a series of webpages, and were debriefed via a final page.

7.3 Results and Discussion

7.3.1 Factor analyses.

The four identity statements were entered into a principal components factor analysis. As shown in Table 7.1, varimax rotation lead to a single factor upon which all four statements loaded positively. This indicated that the four items were not therefore measuring separate identities, but instead represented a unidimensional identity, labeled as a "music-technology based identity" (Cronbach's alpha = .76). Whereas numerous authors have considered musical identity as a discrete entity, the present findings indicate that musical identity is part of a more general technological identity.

Table 7.1.

Principal Component Factor Analysis of the Identity Questionnaire Items

Identity Item	Loading
Music technology is central to my identity.	0.90
Technology is central to my identity.	0.80
Music is central to my identity.	0.70
Web-based Cloud technology is central to my identity.	0.66
Eigenvalue	2.37
% of Variance	59.27

A second principal components analysis was carried out on ratings of the consumer psychology variables. The varimax rotation principal components analysis of the 26 items revealed five factors, which accounted for 59.07% of the variance (see Table 7.2). Items related to seeking out and trying new digital listening technology (hereafter, "DLT"), providing information about DLT to others, being confident about using DLT, and finding DLT fun and easy to use loaded onto factor 1. This factor reflects both the early adoption and opinion leadership concepts; thus, this factor was labeled as "trail blazers." Loadings onto factor 2, "troubled users," concerned feeling intimidated, frustrated, and needing assistance using DLT. The third factor comprised statements that reflected that individuals did not intend to use DLT in the future and felt overwhelmed and required assistance to use DLT, and so this factor was labeled "uninterested users." Factor 4 suggested that while DLT was considered useful, actual use of DLT was limited to simple activities, and so was labeled "basic users." Statements that loaded onto factor 5 reflected waiting for widespread use of a specific technology before personal use. As such, factor 5 was labeled "late adopters." Cronbach's alpha values for the five factors, which were .91, .83, .85, .59, and .62 respectively (Loewenthal, 2001; Tabachnick & Fidell, 2007).

Table 7.2.

Factor Loadings for the Consumer Psychology Questionnaire Statements

Item	Factors [a]				
	1	2	3	4	5
I often influence people's opinions about DLT.	0.76				
I regularly seek new DLT experiences.	0.74				
I usually provide information about new DLT to others.	0.74				
Even if I haven't heard about it before, I will consider trying a new DLT.	0.71				
I like to find some new ways to use DLT.	0.71				
I know about new DLT before other people.	0.69				
I have fun interacting with DLT.	0.66		-0.35		
When using DLT, I am playful and spontaneous.	0.63				

I feel confident using DLT.	0.56	-0.45	-0.36		
I find DLT useful.	0.54		-0.43	0.34	
I plan to use DLT in the future.	0.45		-0.43	0.46	
I can figure out DLT without help.	0.44	-0.60			
I find DLT easy to use.	0.44	-0.59		0.40	
In general, I am hesitant to try new DLT.	-0.31	0.54		0.41	
In general, I am the last in my circle of friends to know about the latest DLT.	-0.31				0.44
I find DLT intimidating.		0.71			
I find using DLT frustrating.		0.70			
The range of DLT options available to me are overwhelming at times.		0.56			0.32
I can use DLT only with help.		0.36	0.57		
I do not intend to use DLT in the future.			0.77		
DLT is not beneficial to me.			0.66		
Using DLT bores me.			0.66		
I like to keep things simple when using DLT.				0.75	
I view DLT only as a tool to access music.				0.65	
Other people rarely come to be for advice about DLT.					0.77
My opinions about DLT do not seem to count with others.					0.62
Eigenvalue	5.59	3.10	2.83	2.13	1.72
% of Variance	21.50	11.92	10.88	8.17	6.60

[a] Factor labels are trail blazers, troubled users, uninterested users, basic users, and late adopters, respectively.

Note. Digital music technology (DLT) was defined as: "Technology, applications, and devices that allow you to listen to music digitally. These include, but are not limited to, computer applications (such as iTunes, Winamp, etc.), mobile devices (such as MP3 players, phones, and tablets), Internet streaming applications (such as Internet radio stations, YouTube, Vevo, Pandora, etc.), and cloud-based applications (such as Spotify, Amazon, iCloud, etc.)."

Loadings < .3 are suppressed.

A third principal components analysis with varimax rotation on participants' ratings of how well the 11 specific potential advantages were associated with the device that they used most frequently to listen to music yielded two factors with eigenvalues greater than one. Together the two factors accounted for 60.67% of the variance and the loadings are displayed in Table 7.3. Familiarity, user control, and centralization loaded strongly on the first factor. Portability and latest technology gave rise to the highest loadings on second factor. Consequently, factor 1 was labeled as representing "familiarized" advantages (Cronbach's alpha = .89) and factor 2 was labeled as representing "progressive" advantages (Cronbach's alpha = .86).

Table 7.3.

Principal Components Analysis of the Advantages as Rated for Preferred Device

	Factor	
Item	1: Familiarized	2: Progressive
Familiarity	0.83	
User control	0.79	
Accessibility	0.72	0.42
Management ease	0.71	0.37
Centralization	0.71	
Ease of use	0.70	0.37
Compatibility	0.60	0.47
Storage	0.35	0.69
Financial reasons	0.35	0.38
Portability		0.85
Latest technology		0.72
Eigenvalue	4.02	2.65
% Variance	36.58	24.09

Table 7.4.

Summary of Bivariate Correlations Concerning the Potential Predictor Variables and Outcome Variables

Variable		Identity score	Familiarized advantages score	Progressive advantages score
Gender	*r*	.04	.03	-.04
	N	340	329	329
Age	*r*	-.03	-.02	-.31***
	N	341	330	330
Country of residence	*r*	-.27***	.44***	.29***
	N	341	330	330
University qualification	*r*	-.05	.02	-.21***
	N	337	326	326
Music importance rating	*r*	.41***	.02	.01
	N	341	330	330
Technology importance rating	*r*	.33**	-.01	.18**
	N	340	329	329
Average daily listening (hours)	*r*	.22***	-.03	.06
	N	339	328	328
Average daily technology use (hours)	*r*	.16**	-.07	.04
	N	337	327	327
How often: Physical CDs/ tapes/ records	*r*	-.11*	.04	-.31***
	N	336	329	329
How often: Digitally via a computer	*r*	.23***	.05	.28***
	N	337	330	330
How often: Digitally via a mobile Device	*r*	.20***	.02	.417**
	N	336	329	329
How often: From an Internet site	*r*	.16**	-.08	.09
	N	336	329	329
How often: From a cloud source	*r*	.23***	-.04	.18**
	N	337	330	330

Desire: Physical CDs/ tapes/ records	*r*	-.08	.07	-.19***
	N	334	329	329
Desire: Digitally via a computer	*r*	.17**	.17**	.26***
	N	333	328	328
Desire: Digitally via a mobile device	*r*	.18**	.07	.32***
	N	333	328	328
Desire: From an Internet site	*r*	.19***	-.02	.16**
	N	333	328	328
Desire: From a cloud source	*r*	.20***	.02	.09
	N	332	327	327
Physical media listening (minutes)	*r*	.11*	-.12*	-.28**
	N	335	324	324
Computer listening (minutes)	*r*	.11	.03	.11*
	N	337	326	326
Mobile listening (minutes)	*r*	.01	-0.05	.18**
	N	335	325	325
Internet listening (minutes)	*r*	.18**	-0.09	-0.06
	N	336	325	325
Cloud listening (minutes)	*r*	.26***	-.12*	.09
	N	336	325	325
Broadcast listening (minutes)	*r*	.14*	-0.09	0.03
	N	336	325	325
Openness	*r*	.14*	0.02	.12*
	N	295	287	287
Conscientiousness	*r*	-.04	0.07	.03
	N	297	289	289
Extraversion	*r*	.05	.00	.12*
	N	296	288	288
Agreeableness	*r*	-.03	-.07	.07
	N	296	288	288
Neuroticism	*r*	-.08	.06	.03
	N	296	288	288
DLT Factor 1 (trail blazers)	*r*	.53***	-.05	.24***

	N	335	328	328
DLT Factor 2 (troubled users)	*r*	-.01	-.02	-.09
	N	335	328	328
DLT Factor 3 (uninterested users)	*r*	-.03	-.08	-.08
	N	335	328	328
DLT Factor 4 (basic users)	*r*	.01	.12*	.03
	N	335	328	328
DLT Factor 5 (late adopters)	*r*	-.07	.15**	-.13*
	N	335	328	328
Computer self-efficacy	*r*	.18**	.24***	.20**
	N	331	327	327
Mobile device self-efficacy	*r*	.15**	0.1	.31***
	N	331	327	327
Internet self-efficacy	*r*	.19***	.18**	.22***
	N	330	326	326
Cloud self-efficacy	*r*	.25***	0.08	.20***
	N	330	326	326
Familiarized advantages score	*r*	-.16**		
	N	329		
Progressive advantages score	*r*	.05		
	N	329		
Identity score	*r*		-.16**	0.05
	N		329	329

Note. The following variables were coded as follows: gender (*females* = 1, *males* = 2, country of residence (*US* = 1, *UK* = 2), and university qualification (*no* = 0, *yes* = 1).
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 7.5.

Hierarchical Multiple Regression Analysis Predicting Music-Technology Identity Scores

Model	Variable	Beta	95% CI	sr^2
1	Country of residence	-0.21**	[-0.80, -0.22]	.043

R^2	0.04			
F	(1, 260) = 11.70**			
2	Country of residence	-0.09***	[-0.52, 0.09]	.006
	Music importance Rating	0.30	[0.12, 0.31]	.060
	Technology Importance Rating	0.12	[0.00, 0.18]	.012
	Average Daily listening (hours)	0.04	[-0.03, 0.06]	.001
	Average daily technology use (hours)	0.07	[-0.01, 0.04]	.004
	How often: Physical CDs/ tapes/ records	-0.09	[-0.11, 0.02]	.005
	How often: Digitally via a Computer	0.08	[-0.04, 0.13]	.004
	How often: Digitally via a Mobile Device	0.02	[-0.06, 0.08]	.000
	How often: From an Internet site	-0.03	[-0.10, 0.07]	.000
	How often: From a cloud source	0.08	[-0.05, 0.13]	.002
	Desire: Digitally via a Computer	-0.05	[-0.11, 0.06]	.001
	Desire: Digitally via a Mobile Device	-0.03	[-0.10, 0.07]	.000
	Desire: From an Internet site	0.20	[0.01, 0.18]	.016
	Desire: From a cloud source	-0.04	[-0.09, 0.06]	.001
	Physical media listening (minutes)	0.11	[0.00, 0.01]	.009
	Internet listening (minutes)	0.00	[0.00, 0.00]	.000
	Cloud listening (minutes)	0.06	[0.00, 0.01]	.002
ΔR^2	0.21			
ΔF	(16, 244) = 4.28***			
3	Country of residence	-0.04	[0.39, 0.18]	.001
	Music importance Rating	0.21**	[0.06, 0.24]	.027
	Technology Importance Rating	0.12*	[0.00, 0.17]	.011
	Average Daily listening (hours)	0.08	[-0.02, 0.08]	.004
	Average daily technology use (hours)	-0.02	[-0.03, 0.02]	.000
	How often: Physical CDs/ tapes/ records	-0.01	[-0.07, 0.06]	.000
	How often: Digitally via a Computer	0.04	[-0.06, 0.10]	.001
	How often: Digitally via a Mobile Device	0.01	[-0.07, 0.10]	.000

	How often: From an Internet site	-0.05	[-0.11, 0.06]	.001
	How often: From a cloud source	-0.06	[-0.12, 0.06]	.001
	Desire: Digitally via a Computer	-0.03	[-0.10, 0.06]	.000
	Desire: Digitally via a Mobile Device	-0.01	[-0.09, 0.07]	.000
	Desire: From an Internet site	0.20*	[0.02, 0.17]	.016
	Desire: From a cloud source	-0.12	[-0.12, 0.02]	.005
	Physical media listening (minutes)	0.11	[0.00, 0.01]	.009
	Internet listening (minutes)	-0.02	[0.00, 0.00]	.000
	Cloud listening (minutes)	0.04	[0.00, 0.01]	.001
	DLT trail blazers score	0.41***	[0.29, 0.52]	.118
	Openness	0.02	[-0.07, 0.10]	.000
	Extraversion	-0.03	[-0.08, 0.05]	.001
	Computer self-efficacy	0.05	[-0.07, 0.11]	.001
	Mobile device self-efficacy	-0.05	[-0.07, 0.03]	.001
	Internet self-efficacy	-0.16	[-0.15, 0.02]	.005
	Cloud self-efficacy	0.22**	[0.02, 0.08]	.022
ΔR^2	0.15			
ΔF	(7, 237) = 8.50***			

Note. Country of residence was coded as *US* = 1, *UK* = 2; *CI* = confidence interval; DLT = digital listening technology.

* $p < .05$, ** $p < .01$, *** $p < .001$.

7.3.2 Identity.

A hierarchical multiple regression analysis was employed to answer the first research question, whether technology usage and psychological variables accounted for a significant proportion of variance in music-technology identity beyond that accounted for by demographic factors. However, to determine predictor variables, bivariate correlations were conducted first between the predictor variables and criterion variables. Only predictor variables demonstrating significant correlations ($\alpha = .05$) were retained for use in the hierarchical multiple regression (see Table 7.4). The variables included country of residence on step 1; the music importance rating, technology importance rating, daily average listening hours, daily average

technology usage hours, the ratings for how often participants used the five devices (physical CDs, tapes, and records; digitally via a computer; a mobile device; an Internet source; and a cloud source), ratings of participants' desire to use computer, mobile, Internet, and cloud devices, and the number of minutes physical media, Internet, and cloud devices were used to listen to music on average daily on step 2; and the trail blazer DLT score, openness and extraversion personality ratings, and the four self-efficacy scores on step 3. In combination, all of the predictor variables explained 40.3% of the variance (R^2 = .40, adjusted R^2 = .34, F (24, 237) = 3.70, p < .001, f^2 = .68). Details concerning individual variables are presented in Table 7.5.

The lack of a relationship between identity and gender is interesting given that research described earlier showing that technology is associated stereotypically with males whereas music is associated stereotypically with females (O'Neill, 1997): it seems that the combined music-technology identity identified in the present data is not gender specific. Similarly, that music-technology identity is unrelated to age perhaps represents a disconnect from recent decades, in which musical innovations have been associated with youth subculture. Since the music importance rating arguably reflects engagement with music, it is not surprising that it related positively to identity. While prior research has demonstrated a link between identity and technological adoption (e.g., Kulviwat et al., 2009; Y. Lee et al., 2006; Thorbjørsen et al., 2007), the present finding demonstrates that engagement with music technology specifically is also tied to one's consideration of his or her identity.

Addressing the first research question, the statistical significance of the psychological variables included in the full model (step 3) indicates that these constructs also contribute to music-technology identity. Thus, psychological variables contribute to an understanding of music technology beyond that provided by demographic factors or consideration of technology usage, and should be considered explicitly. This contrasts with existing research on music, technology and identity, which has tended to focus on demographic characteristics of the individuals concerned and their simple usage of the relevant technologies (e.g., MacDonald, et al., 2009; North, 2010; North & Davidson, 2013). In particular, the positive associations between music-technology identity and both the trail blazer score and self-efficacy with regard to cloud devices indicate that those who use DLT as early adopters and opinion leaders as well as those who feel confident with their

ability to utilize the cloud in order to listen to music have stronger music technology identities. While previous research has indicated a link between innovativeness and adoption (e.g., Agarwal & Prasad, 1998), these findings suggest that early use of technology also relates to one's identity. It is fitting that the trail blazer score was the only significant consumer psychology factor, as it is the user type that most embraces new technology. In contrast, none of the personality variables were able to predict music-technology identity significantly, such that it is the individual's approach to specifically DLT that appears to be important in predicting music-technology identity, rather than more generic, underlying personality dimensions.

7.3.3 Advantages of listening devices.

To address the second research question, two separate hierarchical multiple regression analyses investigated the extent to which demographic, technology usage, and psychological variables could predict scores on the familiarized and progressive advantages of the participants' preferred music listening devices respectively. Again, bivariate correlations (see Table 7.4) determined which predictor variables to include in the regression analyses.

Table 7.6.

Hierarchical Multiple Regression Analysis Predicting Familiarized Advantage Scores

Model	Variable	Beta	95% CI	sr^2
1	Country of residence	0.42***	[0.71, 1.18]	.175
R^2	0.18			
F	(1, 302) = 63.89***			
2	Country of residence	0.43***	[0.74, 1.21]	.180
	Desire: Digitally via a Computer	0.10	[0.00, 0.12]	.010
	Physical media listening (minutes)	0.04	[0.00, 0.01]	.002
	Cloud listening (minutes)	-0.17**	[-0.01, 0.00]	.030
ΔR^2	0.04			
ΔF	(3, 299) = 5.00**			

3	Country of residence	0.44***	[0.76, 1.22]	.169
	Desire: Digitally via a Computer	0.05	[-0.03, 0.09]	.002
	Physical media listening (minutes)	0.07	[0.00, 0.01]	.004
	Cloud listening (minutes)	-0.16**	[-0.01, 0.00]	.024
	DLT Factor 4 (basic users)	0.05	[-0.05, 0.15]	.002
	DLT Factor 5 (late adopters)	0.14**	[0.04, 0.24]	.017
	Computer self-efficacy	0.19	[0.00, 0.18]	.009
	Internet self-efficacy	0.07	[-0.05, 0.12]	.001
	Identity score	-0.06	[-0.16, 0.05]	.003
ΔR^2	0.07			
ΔF	(5, 294) = 5.84***			

Note. Country of residence was coded as *US* = 1, *UK* = 2; *CI* = confidence interval; DLT = digital listening technology.

* $p < .05$, ** $p < .01$, *** $p < .001$.

In the analysis concerning the familiarized advantages, country of residence was entered on step 1; the ratings of participants' desire to use a computer to listen to music, and the daily average minutes spent listening to music via physical format and cloud devices on step 2; and the basic users and late adopters DLT scores, the computer and Internet self-efficacy scores, and the music-technology identity score on step 3. The hierarchical multiple regression was statistically significant ($R^2 = .29$, adjusted $R^2 = .26$, F (9, 294) = 13.02, $p < .001$, $f^2 = .40$; full details in Table 7.6). Time spent listening via cloud sources was negatively associated with the familiarized advantages score. This is logical as this type of advantage is concerned with familiarity and cloud sources represent the latest listening technology. The late adopters consumer psychology DLT factor was positively associated with familiarized scores: as they adopt new technology later, these individuals would likely be comfortable with traditional listening devices and appreciate familiarized advantages of new technology. The country of residence association may be a consequence of technological factors (e.g., bandwidth variations) or cultural differences in attitudes towards music. Hofstede's (2001) cultural dimensions describe how cultures differ along dimensions; and it is possible that cultural

differences on these dimensions influence how individuals interact with music and technology. For instance, "indulgence versus restraint," the dimension that refers to controlling desires and enjoying life, may be of particular relevance to future research.

For the progressive advantages hierarchical multiple regression analysis, age, country of residence, and university qualification were entered on step 1; the technology importance rating, ratings for how often participants used computer, mobile, and cloud sources, ratings of participants' desire to use physical media, computer, mobile, and Internet devices, the number of minutes spent listening to music via physical format, computer, and mobile devices on average daily were entered on step 2; and the trail blazers' and late adopters' DLT scores, openness and extraversion Big Five personality ratings, and four self-efficacy scores were entered on step 3. This hierarchical multiple regression was significant (R^2 = .41, adjusted R^2 = .36, F (23, 233) = 7.12, p < .001, f^2 = .70; details in Table 4.7). While the overall model was significant, the psychological variables entered on step 3 did not add significantly to the proportion of the variance explained, and so it is the second model that serves as the parsimonious, statistically significant explanation. Results indicate that residents of the U.K. were more appreciative of the progressive advantages of listening technology, although it is difficult to understand why without additional research. One possibility may relate to different uses of music in different global regions (North & Davidson, 2013), but future research is better suited to investigate this further.

Table 7.7.

Hierarchical Multiple Regression Analysis Predicting Progressive Advantage Scores

Model	Variable	Beta	95% CI	sr^2
1	Age	-0.23**	[-0.03, -0.01]	.037
	Country of residence	0.27***	[0.40, 0.98]	.073
	University qualification	-0.04	[-0.35, 0.18]	.001
R^2	0.14			
F	(3, 253) = 13.32***			
2	Age	-0.11	[-0.02, 0.00]	.007

	Country of residence	0.23***	[0.30, 0.86]	.043
	University qualification	-0.04	[-0.33, 0.16]	.001
	Technology Importance Rating	0.09	[-0.01, 0.15]	.007
	How often: Physical CDs/ tapes/ records	-0.13	[-0.15, 0.02]	.006
	How often: Digitally via a Computer	-0.03	[-0.10, 0.06]	.001
	How often: Digitally via a Mobile Device	0.17*	[0.01, 0.15]	.012
	How often: From a cloud source	0.10	[-0.01, 0.11]	.008
	Desire: Physical CDs/ tapes/ records	0.00	[-0.07, 0.07]	.000
	Desire: Digitally via a Computer	0.10	[-0.02, 0.14]	.005
	Desire: Digitally via a Mobile Device	0.12	[-0.01, 0.15]	.007
	Desire: From an Internet site	0.02	[-0.05, 0.07]	.000
	Physical media listening (minutes)	-0.21**	[-0.01, 0.00]	.029
	Computer listening (minutes)	-0.03	[0.00, 0.00]	.001
	Mobile listening (minutes)	0.03	[0.00, 0.00]	.001
ΔR^2	0.25			
ΔF	(12, 241) = 7.99***			
3	Age	-0.10	[-0.02, 0.00]	.006
	Country of residence	0.24***	[0.32, 0.89]	.046
	University qualification	-0.08	[-0.41, 0.10]	.003
	Technology Importance Rating	0.06	[-0.04, 0.13]	.003
	How often: Physical CDs/ tapes/ records	-0.09	[-0.13, 0.04]	.003
	How often: Digitally via a Computer	-0.06	[-0.11, 0.05]	.002
	How often: Digitally via a Mobile Device	0.12	[-0.02, 0.13]	.006
	How often: From a cloud source	0.07	[-0.04, 0.11]	.003
	Desire: Physical CDs/ tapes/ records	-0.01	[-0.08, 0.07]	.000
	Desire: Digitally via a Computer	0.09	[-0.03, 0.14]	.004
	Desire: Digitally via a Mobile Device	0.12	[-0.02, 0.15]	.006
	Desire: From an Internet site	0.03	[-0.05, 0.08]	.001
	Physical media listening (minutes)	-0.22***	[-0.01, 0.00]	.033

	Computer listening (minutes)	-0.05	[0.00, 0.00]	.002
	Mobile listening (minutes)	0.00	[0.00, 0.00]	.000
	DLT Factor 1 (trail blazers)	0.07	[-0.05, 0.19]	.004
	DLT Factor 5 (late adopters)	-0.09	[-0.20, 0.02]	.007
	Openness	0.07	[-0.03, 0.15]	.004
	Extraversion	0.07	[-0.03, 0.11]	.004
	Computer self-efficacy	0.06	[-0.07, 0.12]	.001
	Mobile device self-efficacy	0.11	[-0.02, 0.09]	.004
	Internet self-efficacy	-0.11	[-0.14, 0.04]	.003
	Cloud self-efficacy	0.01	[-0.03, 0.03]	.000
ΔR^2	0.03			
ΔF	(8, 233) = 1.51			

Note. The following variables were coded as follows: country of residence (*US* = 1, *UK* = 2) and university qualification (*no* = 0, *yes* = 1); *CI* = confidence interval; DLT = digital listening technology.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Secondly, those who preferred progressive advantages tended not to use physical media in their daily listening (minutes spent listening to physical media) but used mobile devices (rating for how often one uses a mobile device). It is unknown whether such advantages are learned as a consequence of actually using devices or whether devices chosen a priori because of their perceived advantages. Regardless, the association between progressive advantages and mobile device use reflects the practical manifestation of the portability feature inherent to this type of advantages. None of the psychological variables was a significant predictor of scores on the progressive advantages. It is possible that these technology usage variables directly assessed the practical manifestation of a progressive approach to music technology, which may have crowded out any variance attributable to those psychological variables entered on step 3.

7.3.4 Preferred devices.

When participants were asked to report which device they used most often (henceforth "preferred device"), mobile listening devices were most popular, accounting for 33.8% of citations, while a desktop computer hard disc accounted for 32.6% and Internet access for 15.4% of the cases. Cloud sources, on the other hand, were listed the least often: only 2.1% indicated that this was the way they most often accessed music. It is interesting that physical media that were invented in the 20th century (CDs, cassette tapes, and records) were chosen approximately seven times more commonly (15.5%) than cloud-based technology.

To address research question 3, a MANOVA was performed in which preferred device was employed as the grouping variable to investigate differences on three dependent variables, namely music-technology identity scores, scores on the familiarized factor, and scores on the progressive factor. Due to the small number of participants listing cloud sources as their preferred device these were integrated into the "Internet" category for analysis. The MANOVA was statistically significant (F (9, 957) = 13.27, $p < .001$, $\eta_p^2 = .11$). Univariate data indicated no significant effect on familiarized factor scores. However, the identity score and progressive advantages score were statistically significant (F (3, 319) = 4.44, $p < .01$ and F (3, 319) = 40.80, $p < .001$, respectively). Group means and standard errors are presented in Table 7.8.

Table 7.8.

MANOVA Results Regarding Users' Preferred Devices and the Identity and Advantages Factor Scores

Dependent Variable	Device most often used	Mean	*SE*
Identity Factor	Physical	-0.14	0.14
	Computer	-0.09	0.10
	Mobile	-0.07	0.09
	Internet/ cloud	0.43	0.13
Advantages Factor 1	Physical	0.02	0.14
	Computer	0.16	0.10
	Mobile	-0.03	0.10

	Internet/ cloud	-0.26	0.13
Advantages Factor 2	Physical	-1.14	0.12
	Computer	0.16	0.08
	Mobile	0.43	0.08
	Internet/ cloud	-0.15	0.11

Note. *SE* = standard error.

Understandably, users preferring a physical media format did not associate the progressive advantages with their preferred device. In contrast, mobile device users experienced this advantage most acutely, which is logical as portability and latest technology were the highest loading items on this factor (see Table 7.3). In short, participants' preferred devices appear to align with the intuitive advantages of those devices. Additionally, results indicated that music-technology identity scores differed according to preferred device. Specifically, individuals who utilized the Internet (and cloud devices) to access music were most likely to have a high music-technology identity score, while those who preferred physical devices had lower scores. As noted earlier, musical identity among young people has tended to be based around particular musicians or musical styles (Rentfrow & Gosling, 2003), and Dittmar (2008) maintains that individuals make purchases in part to communicate their identity to others. The present findings suggest that, beyond musicians and musical styles, it may also be appropriate to define one's musical identity in terms of the device by which one consumes music (since the one-dimensional identity shown in Table 1 does not separate music from technology). Future research will be better placed to further explore technology-based identities (as related to music and other subjects, like reading and telephones) as well as detail the implications of these. One interesting possibility is that musical identity is less of a social and artistic phenomenon than it was (perhaps just imagined to be) historically and is more rooted in technology.

7.4 Conclusion

In sum, a singular music-technology identity was found, and there were two types of advantages (familiarized and progressive) associated with the devices used

by participants to listen to music. Additionally, technology usage, self-efficacy, and how one approached using listening technology were significantly related to both identity and the advantages perceived endemic to differing listening devices. Moreover, the music-technology identity score and perceived advantages differed according to the users' preferred device, such that users of physical media did not place emphasis on the progressive advantages of differing devices while mobiles users did; and those who accessed their music via the Internet had the strongest positive music-technology identity.

The focus of the present investigation was on the specific listening devices that people use. However, it is possible to ask many of the same questions addressed in the present chapter with regard to the means by which people select music. Consequently, the study presented in the next Chapter (8) uses a similar method to examine how people use different selection methods to access their music collection for listening. A more detailed conclusion, based on the research reported in both Chapters 7 and 8, is provided at the end of the latter.

Chapter 8: A Focus on Selection Behaviors[7]

While Chapter 7 focused on the type of device used to access music, the research reported in the present study explored how listeners select music to listen to from a collection. The means of selecting and interacting with individual pieces and collections of music have changed also as a consequence of digital technology. While the technology of the late 20th century grouped individual pieces of music on CDs, vinyl records or tapes containing approximately 45-90 minutes of music that was played sequentially, digitization allows users to select individual pieces based on any number of attributes (Molteni & Ordanini, 2003). Moreover, in addition to selecting individual pieces of music or music by a particular artist, digital technology allows users to define "playlists" to be played automatically, or to use "shuffle" options through which a device will randomly select a series of pieces from a user's collection. Three popular selection methods were considered, namely specific items (i.e., songs/ artists/ albums), playlists, and device-generated random presentation (i.e., shuffle).

8.1 Variables of Interest

Cunningham et al. (2006) recognized that there is a difference in the effort involved in creating a playlist as opposed to listening via shuffle. In particular, Heye and Lamont (2010) suggested that shuffle listening might be related to lower engagement with technology and/or music. Other research suggests that shuffle is

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[7] *Note*. The material used in this chapter also appears as Study 2 in a manuscript submitted for publication, a revised version of which is currently under review (co-author statements are located in Appendix B). Additionally the results of this study were presented at the 2013 Society for Music Perception and Cognition (SMPC) Conference in Toronto, Canada.

Krause, A. E., & North, A. C. (2014). Music listening in everyday life: Devices, selection methods, and digital technology. *Manuscript submitted for publication.*

used to keep one's music collection "fresh" (Batt-Rawden & DeNora, 2005); to introduce serendipity into one's listening (Leong, Howard, & Vetere, 2008); to overcome boredom (Cunningham et al., 2006); and when there is no strong preference (Kibby, 2009; Leong, Vetere, & Howard, 2008). This raises the issue of how music selection by these methods can be explained, and it is possible to speculate on a number of possible relationships between music selection strategies and the variables employed in Chapter 7 (namely demographic factors, identity, personality, and the consumer psychology variables).

We might expect that those demographic factors associated with a more general predisposition towards technology would also be associated with playlist listening, as these indicate a willingness to engage in the manipulation of a music collection in order to create personalized listening. For similar reasons, those who score highly on an identity pertaining to music technology might display a greater use of playlists. With regard to the personality dimensions, we might expect that openness, in particular, is associated with music selection strategy, such that those scoring higher on this dimension would be disposed more positively towards using the shuffle function as a consequence of their more general curiosity and enjoyment of the unexpected. Finally, we might expect that those with scores reflecting innovativeness and confidence with digital listening technologies will also employ playlists as a listening strategy.

As in Chapter 7, the main issue investigated was whether the variables in question, in this case music selection strategy, could be explained by psychological variables as well as more conventional demographic factors and music technology usage variables alone. As such, the analysis followed closely that employed in Chapter 7 in addressing two research questions.

RQ1: Do demographic, technology usage, and/or psychological variables predict individuals' musical identity (as in Chapter 7)?

RQ2: What variables pertain to music selection strategies (i.e., making a specific choice, using playlists, using shuffle)?

8.2 Method

8.2.1 Participants.

Individuals were approached in person (at a local arts festival and on a university campus) and the study was advertised online for participation. As in Chapter 7, mean responses to each variable were calculated for the paper- and web-based samples and, because the product-moment correlation between these data sets was .96, they were merged for subsequent analyses. Analyses were conducted using the data from 275 individuals from the U.S. (25.1%) and U.K. (74.9%). Ages ranged from 16-64 years (M = 22.28, Mdn = 19), 72% of the sample was female, and 22.9% of the participants had university qualifications. Participation was voluntary although some university students received coursework credit for their participation.

8.2.2 Measures.

The demographic questions, the four identity statements, Langford's (2003) Big 5 personality proxy scale, and the consumer psychology items were as per Chapter 7.

Additionally, participants indicated the average amount of time they spent listening (in minutes) to music via different 13 technologies (which were then reduced to six groups, namely physical media, computer, mobile, Internet, cloud, and broadcast technologies). Lastly, to provide information on their listening selection habits, individuals indicated how often they used different methods (specific artist, album, song; playlist; random/shuffle) to select music via a seven-point scale (1 = *never*, 7 = *always*). (See Appendix Q for the entire questionnaire.)

8.2.3 Procedure.

Participants completed a questionnaire. Some did so online, whereas others were approached in person and asked to complete a physical copy. In both cases, participants were provided with instructions for completion in advance and were then thanked and debriefed upon completion.

8.3 Results and Discussion

8.3.1 Factor analyses.

Responses to the four identity-related items were entered into a principal components analysis. As in the studies previously reported in Chapters 4, 5, and 7, varimax rotation of the principal components solution indicated the existence of a uni-dimensional identity, labeled as a "music-technology based identity" (Cronbach's alpha = .76; see Table 8.1).

Table 8.1.

Principal Component Factor Analysis of the Identity Questionnaire Items

Identity Item	Loading
Music technology is central to my identity.	0.91
Technology is central to my identity.	0.76
Music is central to my identity.	0.75
Web-based Cloud technology is central to my identity.	0.61
Eigenvalue	2.35
% of Variance	58.70

In a second principal components analysis, varimax rotation of the 26 consumer psychology questionnaire items indicated the existence of six factors, which accounted for 59.71% of the variance. Item loadings are shown in Table 8.2. While the consumer psychology factors in this study did not match those of Chapter 7 exactly, there were several notable commonalities. As per the pattern of item loadings, the six factors were labeled "confident users," "explorers," "uninterested users," "opinion leaders," "hesitant users," and "basic users" respectively. Cronbach's alpha values for the six factors respectively were .83, .85, .80, .76, .68, and .49. (While lower than the other reliability scores, this final factor consists of only three items; Loewenthal, 2001.)

Table 8.2.

Consumer Psychology Questionnaire Statement Factor Loadings

	Factors [a]					
	1	2	3	4	5	6
I find DLT easy to use.	0.73					
I feel confident using DLT.	0.70	0.36				
I can figure out DLT without help.	0.67					
I plan to use DLT in the future.	0.42		-0.57			
I find DLT useful.	0.35		-0.58			
I can use DLT only with help.	-0.55					
I find DLT intimidating.	-0.62				0.53	
I find using DLT frustrating.	-0.67					
Even if I haven't heard about it before, I will consider trying a new DLT.		0.79				
I like to find some new ways to use DLT.		0.69				
I regularly seek new DLT experiences.		0.62				
I have fun interacting with DLT.		0.59	-0.47			
When using DLT, I am playful and spontaneous.		0.57				
I know about new DLT before other people.		0.42		0.66		
I usually provide information about new DLT to others.		0.40		0.60		
In general, I am hesitant to try new DLT.		-0.39			0.59	
DLT is not beneficial to me.			0.73			
Using DLT bores me.			0.71			
I do not intend to use DLT in the future.			0.62			
I often influence people's opinions about DLT.				0.76		
I like to keep things simple when using DLT.				-0.34		0.55
In general, I am the last in my circle of friends to know about the latest DLT.				-0.35	0.32	0.37
Other people rarely come to be for advice about DLT.				-0.73	0.30	

My opinions about DLT do not seem to count with others.					0.72	
The range of DLT options available to me are overwhelming at times.					0.64	
I view DLT only as a tool to access music.						0.84
Eigenvalue	6.97	2.78	2.13	1.43	1.21	1.01
% of Variance	26.82	10.70	8.19	5.49	4.65	3.87

[a] Factor labels are confident users, explorers, uninterested users, opinion leaders, hesitant users, and basic users, for factors 1-6 respectively.

Note. Digital music technology (DLT) was defined as: "Technology, applications, and devices that allow you to listen to music digitally. These include, but are not limited to, computer applications (such as iTunes, Winamp, etc.), mobile devices (such as MP3 players, phones, and tablets), Internet streaming applications (such as Internet radio stations, YouTube, Vevo, Pandora, etc.), and cloud-based applications (such as Spotify, Amazon, iCloud, etc.)."

Loadings < .3 are suppressed.

8.3.2 Identity.

A hierarchical multiple regression analysis was employed to determine the extent to which scores on the identity factor could be predicted by demographic variables, technology usage-related variables, and psychological variables. Bivariate correlations (see Table 8.3) were conducted first to determine relevant predictor variables.

Table 8.3.

Summary of Bivariate Correlations Concerning the Potential Predictor Variables and Outcome Variables

		Identity score	How often: specific selection	How often: playlist	How often: shuffle
Gender	*r*	-.01	.12	-.16**	-.17**

	N	275	271	271	271
Age	*r*	-.14*	.03	-.22***	-.14*
	N	275	271	271	271
Country of residence	*r*	-.22***	.02	-.08	.01
	N	275	271	271	271
University qualification	*r*	-.03	.14*	-.04	-.07
	N	275	271	271	271
Music importance Rating	*r*	.51***	-.01	.16**	.02
	N	272	268	268	268
Technology Importance Rating	*r*	.34***	-.01	.13*	.03
	N	270	266	266	266
Average Daily listening (hours)	*r*	.33***	-.07	.20**	.00
	N	270	266	266	266
Average daily technology use	*r*	.22***	.07	.19**	-.10
(hours)	*N*	269	265	265	265
Physical media listening	*r*	.01	-.02	-.08	-.17**
(minutes)	*N*	273	270	270	270
Computer listening (minutes)	*r*	.25***	-.03	.13*	.05
	N	272	269	269	269
Mobile listening (minutes)	*r*	.17**	-.07	.07	.13*
	N	270	267	267	267
Internet listening (minutes)	*r*	.06	-.03	.13*	.01
	N	273	270	270	270
Cloud listening (minutes)	*r*	.28***	.00	.13*	-.15*
	N	273	270	270	270
Broadcast listening (minutes)	*r*	-.01	-.04	.10	-.02
	N	273	270	270	270
Openness	*r*	.18**	.07	.08	-0.08
	N	261	257	257	257
Conscientiousness	*r*	.12	-.01	.20**	-.07
	N	262	258	258	258
Extraversion	*r*	.08	.06	.10	-.06
	N	262	258	258	258

Agreeableness	*r*	-.04	.02	-.10	.04
	N	262	258	258	258
Neuroticism	*r*	-.03	-.02	.01	-.03
	N	262	258	258	258
Confident users (DLT Factor 1)	*r*	.17**	.10	.05	.01
score	*N*	269	269	269	269
Explorers (DLT Factor 2) score	*r*	.31***	.06	.06	.07
	N	269	269	269	269
Uninterested users (DLT Factor	*r*	-.27***	.00	-.16*	-.20**
3) score	*N*	269	269	269	269
Opinion leaders (DLT Factor 4)	*r*	.29***	.08	.18**	.06
score	*N*	269	269	269	269
Hesitant users (DLT Factor 5)	*r*	.07	-.05	-.12	-.08
score	*N*	269	269	269	269
Basic users (DLT Factor 5) score	*r*	.03	-.09	-.03	.00
	N	269	269	269	269
How often: specific selection	*r*	-.01		-.01	.03
	N	271		271	271
How often: playlist	*r*	.19**	-.01		.12*
	N	271	271		271
How often: shuffle	*r*	.12	.03	.12*	
	N	271	271	271	
Identity score	*r*		-.01	.19**	.12
	N		271	271	271

Note. The following variables were coded as follows: gender (*females* = 1, *males* = 2, country of residence (*US* = 1, *UK* = 2), and university qualification (*no* = 0, *yes* = 1).
* $p < .05$, ** $p < .01$, *** $p < .001$

Step 1 entered age, and country of residence; step 2 entered the music importance rating, the technology importance rating, daily average listening hours, daily average technology usage hours, and the time spent per day listening to music

via the computer, mobile devices, and cloud devices; and step 3 entered the confident user, explorer, uninterested user, and opinion leader DLT scores, and the openness personality rating. In combination, all of the predictor variables explained 39.1% of the variance in identity score (R^2 = .39, adjusted R^2 = .35, F (14, 218) = 9.98, p < .001, f^2 = .54; see Table 8.4). Compatible with the results of Study 1, the results show that the importance of music and technology in one's life positively related to possession of a music-technology identity. Moreover, the opinion leader consumer psychology factor score was positively related to possessing this identity. Therefore, results suggest that those who embrace new digital listening technology do not simply use said technology but may also incorporate it into their identity. These results support those of study 1 and complement Thorbjørnsen, et al.'s (2007) suggestion that we must consider identity not only in terms of technology adoption, but also in terms of the features of those who use technology.

Table 8.4.

Hierarchical Multiple Regression Analysis Predicting Music-Technology Identity Scores

Model	Variable	Beta	95% CI	sr^2
1	Age	-0.11	[-0.03, 0.00]	.013
	Country of residence	-0.20**	[-0.71, -0.16]	.041
R^2	0.05			
F	(2, 230) = 6.56**			
2	Age	-0.08	[-0.03, 0.00]	.006
	Country of residence	-0.09	[-0.44, 0.05]	.007
	Music importance rating	0.40***	[0.19, 0.36]	.125
	Technology importance rating	0.21**	[0.07, 0.26]	.037
	Average daily listening (hours)	-0.05	[-0.06, 0.03]	.001
	Average daily technology use (hours)	0.09	[-0.01, 0.04]	.006
	Computer listening (minutes)	0.04	[0.00, 0.00]	.001
	Mobile listening (minutes)	0.10	[0.00, 0.00]	.008
	Cloud listening (minutes)	0.13*	[0.00, 0.01]	.015

ΔR^2	0.28			
ΔF	(7, 223) =13.40***			
3	Age	-0.06	[-0.02, 0.01]	.003
	Country of residence	-0.06	[-0.36, 0.12]	.003
	Music importance rating	0.36***	[0.16, 0.33]	.086
	Technology importance rating	0.16*	[0.03, 0.22]	.018
	Average daily listening (hours)	-0.07	[-0.06, 0.02]	.003
	Average daily technology use (hours)	0.09	[-0.01, 0.04]	.005
	Computer listening (minutes)	0.02	[0.00, 0.00]	.000
	Mobile listening (minutes)	0.09	[0.00, 0.00]	.006
	Cloud listening (minutes)	0.08	[0.00, 0.01]	.006
	Confident users (DLT Factor 1) score	0.05	[-0.06, 0.14]	.002
	Explorers (DLT Factor 2) score	0.11	[0.00, 0.21]	.010
	Uninterested users (DLT Factor 3) score	-0.11	[-0.21, 0.01]	.010
	Opinion leaders (DLT Factor 4) score	0.20***	[0.09, 0.29]	.039
	Openness	0.01	[-0.08, 0.09]	.000
ΔR^2	0.06			
ΔF	(5, 218) = 4.03**			

Note. Country of residence was coded as *US* = 1, *UK* = 2; *CI* = confidence interval.

* $p < .05$, ** $p < .01$, *** $p < .001$.

8.3.3 Selection methods.

Research question 2 queried whether demographic, technology usage, and psychological variables could account for a significant proportion of the variance in how often music was selected via three different methods respectively, namely by choosing a specific selection, a playlist, or a random/shuffle function.

Only one variable was significantly correlated with choosing by a specific selection method—university qualification. Because of this, a hierarchical multiple regression was not performed. The weak, positive correlation (Table 8.3) implies that individuals with a university qualification select specific music as an access strategy more often. Perhaps this type of access is too idiosyncratic or complex to be predicted by the variables examined in the present research, and conventional musical taste variables, such as those considered within the field of experimental aesthetics (such as considering the selected music in terms of pleasure and arousal as per Berlyne's (1971) theory), should be considered in future research.

As for selecting music via playlists, significant correlations (see Table 8.3) led to the entry of age and gender on step 1; the music importance rating, technology importance rating, daily average listening hours, daily average technology usage hours, and time spent daily listening via computer, Internet, and cloud devices on step 2; and the uninterested and opinion leader DLT scores, conscientiousness personality rating, and the identity score on step 3 of the hierarchical multiple regression analysis. The predictor variables, in combination, explained 18.8% of the variance (R^2 = .19, adjusted R^2 = .14, F (14, 220) = 3.64, p < .001, f^2 = .23; details in Table 8.5). The results indicate that scoring higher on the opinion leader score as well as higher on the conscientious personality trait were both associated with being more likely to use playlists. As playlists require effort beyond a simple choice (e.g. choosing and creating lists, ordering presentation, etc.), their usage may require a user to find worth and put effort into such an endeavor. Thus, being high in conscientiousness makes sense as this might tap into the planning/ preparedness element of this personality trait. Playlist usage by opinion leaders supports previous research that indicates that opinion leaders are more involved and have greater computer skills (e.g., Lyons & Henderson, 2005) and more likely to fully use a device's full functionality (e.g., Kang & Yoon, 2008).

Table 8.5.

Hierarchical Multiple Regression Analysis Predicting Playlist Listening

Model	Variable	Beta	95% CI	sr^2
1	Gender	-0.11	[-0.96, 0.09]	.011
	Age	-0.15*	[-0.08, -0.01]	.023

R^2	0.04			
F	(2, 231) = 4.63*			
2	Gender	-0.13*	[-1.06, -0.02]	.017
	Age	-0.11	[-0.06, 0.01]	.011
	Music importance rating	0.10	[-0.05, 0.34]	.009
	Technology importance rating	0.09	[-0.07, 0.36]	.007
	Average daily listening (hours)	0.06	[-0.06, 0.14]	.003
	Average daily technology use (hours)	0.10	[-0.01, 0.10]	008
	Computer listening (minutes)	0.08	[0.00, 0.01]	.006
	Internet listening (minutes)	0.02	[0.00, 0.00]	.000
	Cloud listening (minutes)	0.12	[0.00, 0.01]	.013
ΔR^2	0.08			
ΔF	(7, 224) = 3.07**			
3	Gender	-0.12	[-1.01, 0.02]	.013
	Age	-0.09	[-0.06, 0.01]	.007
	Music importance rating	0.03	[-0.18, 0.26]	.000
	Technology importance rating	0.08	[-0.10, 0.34]	.004
	Average daily listening (hours)	0.07	[-0.05, 0.14]	.003
	Average daily technology use (hours)	0.09	[-0.02, 0.09]	.006
	Computer listening (minutes)	0.10	[0.00, 0.01]	.008
	Internet listening (minutes)	-0.01	[0.00, 0.00]	.000
	Cloud listening (minutes)	0.07	[0.00, 0.01]	.004
	Uninterested users (DLT Factor 3) score	-0.09	[-0.41, 0.09]	.006
	Opinion leaders (DLT Factor 4) score	0.15*	[0.03, 0.52]	.018
	Conscientiousness	0.22**	[0.14, 0.48]	.045
	Identity score	0.04	[-0.25, 0.40]	.001
ΔR^2	0.07			
ΔF	(4, 220) = 4.95**			

Note. Gender was coded as *females* = 1, *males* = 2; *CI* = confidence interval; DLT = digital listening technology.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Retained predictor variables that were entered into the hierarchical multiple regression analysis for listening via shuffle were age and gender on step 1; the number of minutes spent listening to music on average daily via physical formats, mobile, and cloud devices on step 2; and the uninterested DLT score on step 3. In combination, the predictor variables explained 9.2% of the variance (R^2 = .09, adjusted R^2 = .07, F (7, 249) = 3.63, p < .01, f^2 = .10; details in Table 8.6). The uninterested DLT score was negatively associated with using shuffle, which may be because these individuals do not want to engage in the selection process. As a listening strategy, it has been suggested that shuffle requires less effort and involvement (Heye & Lamont, 2010), so it is possible that the lack of cognitive involvement with the music selected via shuffle explains why few psychological predictor variables were retained for the analysis. By choosing shuffle, listeners have given control of the song selection to a program rather than putting in personal effort. Interestingly, Heye and Lamont (2010) commented that females tended to be less knowledgeable about their devices, and here the results indicated that females were more likely to use shuffle.

Table 8.6.

Hierarchical Multiple Regression Analysis Predicting Shuffle Listening

Model	Variable	Beta	95% CI	sr^2
1	Gender	-0.18**	[-1.22, -0.24]	.032
	Age	-0.05	[-0.05, 0.02]	.002
R^2	0.04			
F	(2, 254) = 4.89**			
2	Gender	-0.18**	[-1.21, -0.23]	.031
	Age	-0.04	[-0.05, 0.03]	.002
	Physical media listening (minutes)	-0.11	[-0.02, 0.00]	.011
	Mobile listening (minutes)	0.09	[0.00, 0.00]	.007
	Cloud listening (minutes)	-0.03	[-0.01, 0.01]	.001
ΔR^2	0.02			
ΔF	(3, 251) = 1.69			
3	Gender	-0.17**	[-1.17, -0.19]	.028
	Age	-0.04	[-0.05, 0.03]	.001

	Physical media listening (minutes)	-0.08	[-0.02, 0.00]	.006
	Mobile listening (minutes)	0.07	[0.00, 0.00]	.004
	Cloud listening (minutes)	-0.03	[-0.01, 0.01]	.001
	Uninterested users (DLT Factor 3) score	-0.15*	[-0.49, -0.05]	.021
ΔR^2	0.02			
ΔF	(1, 250) =5.94*			

Note. Gender was coded as *females* = 1, *males* = 2; *CI* = confidence interval; DLT = digital listening technology.

* $p < .05$, ** $p < .01$, *** $p < .001$.

8.4 Conclusion

The present study confirmed the singular music technology identity identified by other research presented in this thesis (Chapters 4, 5, and 6). Adoption of this identity was predicted by opinion leadership and by considering both music and technology important in life. Results indicated that a different pattern of significant predictor variables existed for listening to music via playlists and shuffle respectively. Females were more likely to use shuffle compared to males. Listening via playlists was predicted by scoring more highly as an opinion leader and by conscientiousness.

In general, the research presented in Section Two indicates that in order to understand how people interact with music in everyday life it is insufficient to merely map the demographic characteristics of the individuals concerned or to know how much time people spend with different listening devices. Rather, the consideration of psychological constructs commonly considered in consumer psychology research (such as opinion leadership and self-efficacy) contributed to a better understanding of everyday listening habits and technology use. The present research, then, represents only an initial exploration of the utility of applying constructs from consumer psychology to everyday music listening behaviors.

Musical taste and its associated behaviors are obviously complex, and while it was not expected that a single variable would predict these different behaviors, the all but complete absence of significant effects concerning personality is a surprising reminder of this. Interestingly, the absence of effects involving

personality traits is consistent with prior research: North (2010) found that personality could predict only very small amounts (typically around 2-5%) of the variance in musical taste among a very large sample. Future research may consider listening habits in terms of different uses of music, as Chamorro-Premuzic, et al. (2012) found that the uses to which music was put were stronger predictors of consumption than were intra-individual traits.

The findings from Chapters 7 and 8 also raise a number of questions for future research concerning device usage, selection behaviors, and (music) technology-based identity. Specifically, while age was included in the present analyses, both samples comprised predominantly young adults. Thus it would be interesting to explore these topics with a sample representing a wider age range, and to include income as a variable also as a covariate: this research might investigate the extent to which age (and cohort) may explain variations in music technology usage. Similarly, adopting an explicitly cross-cultural approach could allow investigation of broader cultural differences between regions (in terms of, for example, individualism – see Hofstede, 2001) in an attempt to explain variations in how individuals interact with their music collections (and the extent to which these variations are related solely to corresponding variations in income and similar tangible constraints on access to music technology). Finally, the connection between music, technology, and identity deserves more attention. The present results have suggested that music and technology are intertwined, via concepts such as opinion leadership, but a broader consideration of the role of technology (not just regarding music) may assist explanations of musical behavior through the remainder of the present century.

Section Three: A Focus on Social Media

Participating in social media is now a mainstream activity. As of May 2013, 72% of online US adults used social networking websites (SNS) (Brenner & Smith, 2013). Individuals utilize these social platforms for a myriad of reasons, including interacting with celebrities and particularly musicians (Chen, 2011). In fact, in 2013, nine out of 10 of the most liked people on Facebook were musicians; seven of the top 10 most followed people on Twitter were musicians; and nine out of 10 of the most popular YouTube videos were music-based (International Federation of the Phonographic Industry, 2013). These striking statistics illustrate how intertwined music and social media are. The Internet and social media have "accelerated music's diffusion and access through various online channels. Besides consumption, these technologies afford people opportunities to interact with digital music in different ways" (Leong & Wright, 2011, p.1). For instance, social media increase the potential for musician-fan interactions, providing more opportunities for fans to feel psychologically-close to musicians (Click, Lee, & Holladay, 2013). Some musicians, perceived as socially-inaccessible previously, are now interacting with fans online, sharing their lives in a more unfiltered manner (Burns, 2009). Fans of Lady Gaga (known for using social media to interact with fans), for example, perceived her social media outputs as involved, authentic, intimate, and reciprocal forms of communication (Click et al., 2013). As Burns (2009) wrote, "we are seeing a cultural shift in music as a result of social media, and in turn, a shift in social media because of music" (p. 106). As such, it is impossible to understand the role of music in the modern social world without an understanding of music in the context of SNS. However, the recency of this development means that it is not well understood.

The three studies in Section 3 consider music-related behaviors in the context of social network sites, with the aim of understanding online music fan practices from an explicitly psychological perspective. The research in Chapter 9 considers which variables can predict whether individuals interact with musicians on social networking sites, and opinions about doing so, while the research in Chapter 10 considers music behaviors on the popular social networking website, Facebook, in particular. Using the Uses and Gratifications perspective, Chapter 11

further explores the potential benefits from using Facebook applications as a way of listening to music.

Chapter 9: Music Fan Practices on Social Media[8]

While there is a growing body of research on social networking websites (SNS), little attention has been paid to music-related actions or interactions. This is surprising for two reasons. The statistics reported in the opening to Section Three demonstrate the close relationship between social media and music, but the omission of research on online music-related behaviors is also surprising given that people's experiences with music are being altered by SNS platforms (Leong & Wright, 2013; Mesnage, Rafiq, Dixon, & Brixtel, 2011). Such platforms support the discovery, sharing, and purchasing of music, as well as broadcasting this consumption to others. Moreover, music-related SNS activities likely involve a complex set of motivations, attitudes, and emotions that psychological variables are well placed to address. This in turn raises the issue of, firstly, whether psychological variables can predict music SNS activities and, secondly, if so which specific variables in particular are predictive.

Technology and the Internet position fan practices into the stream of everyday life and extend the range and immersive possibilities of fandom (Gray, Sandvoss, & Harrington, 2007). Fandom encourages and relies on community and socialization (Booth, 2010), and it is noteworthy that these are what SNS are particularly well-placed to offer users. Previously, fandom research has focused on power differentials and specific fan objects (Gray et al., 2007). However, the practice of being a fan has changed, and attention needs to shift away from the state of being a fan, to the choice of fan object, the associated surrounding practices, and

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[8] *Note*. Material used in this chapter also appears as Study 1 in a manuscript submitted for publication. This chapter is based on the revised version of the journal manuscript, which is currently under review. See Appendix B for co-author contribution statements.

Krause, A. E., North, A. C., & Heritage, B. (2014). Psychological correlates of music fan practices on social networking sites. *Manuscript submitted for publication.*

what these tell us about the psychological and social status of the fan in question (Gray et al., 2007). Clearly, this involves considering fandom as a psychological phenomenon, though what, "remains largely unexplored in the field of fan studies is the application of psychological theory which goes beyond the often pathologizing lens of psychoanalytic analysis to examine both individual and communal psychological aspects of fanning" (Larsen & Zubernis, 2012, p. 8). This includes a focusing on using SNS features to perform music fan practices, such as arriving at information about favored musicians, interacting with musician SNS users, as well as sharing music content and even listening to music. Therefore, the present research aimed to approach SNS fan behavior from a perspective that considers psychological constructs in addition to more general predispositions and technology usage behaviors.

9.1 Variables of Interest

The reciprocal feedback model (introduced in Chapter 1, see 1.1) asserts that musical behaviors are shaped by three factors—the music, the individual, and the context (Hargreaves et al., 2005; North & Hargreaves, 2008). The music can be analyzed in different ways, including its style and genre but also its complexity, familiarity, and prototypicality; and key variables related to the context include time and location, the presence of other people, and whether other ongoing activities take place. Listeners, the people themselves, vary with respect to those individual difference factors typically studied with in psychology as well as their musical preferences and identities. The model was named 'reciprocal-feedback' because any factor can interact and influence the others in any direction to determine the response, which has physiological, cognitive, and affective components (Hargreaves, 2012; Hargreaves et al., 2005; Hargreaves & North, 2010). Very little research has considered the context, and the greatest amount of work has addressed factors concerning the individual. As such, this provides the strongest basis on which to develop an understanding of music behaviors in the context of SNS.

The present research is focused at the level of the individual: previous research indicates that there are a number of different variables to consider with regard to this, including demographic information, level of music engagement, self-perception variables (i.e., self-efficacy, self-esteem, and attachment), personality,

identity, consumption behaviors and attitudes, and also the person's interest in celebrities. The present research aims to consider each of these variables within a single research design, and the rationale for consideration of each is detailed below.

Firstly, SNS fan practices may relate to demographic characteristics, such as age and sex. Older individuals may use SNS to a lesser degree than younger individuals, perhaps, as Pettijohn, LaPiene, Pettijohn, and Horting (2012) suggested, due to lesser familiarity with the technology or a focus on different social goals. While SNS adoption rates are increasing for older populations, SNS sites are still most popular with 18-29 year olds (Brenner & Smith, 2013), a time in life at which music has been found to be very important to people (Tarrant, North, & Hargreaves, 2002). A person's sex should also be considered. Men are more likely to listen to music, watch videos, and look for information about leisure activities online than are women (Jones et al., 2009), and women are less likely to use technology to discover new music than are men (Tepper & Hargittai, 2009) so it is possible that SNS fan practices may differ by sex.

Moreover, it seems sensible to consider a person's level of engagement with music as a potential variable as in previous chapters—as it relates to how people approach music activities and interact with music collections (Greasley & Lamont, 2006, 2011) and their music discovery behaviors (Tepper & Hargittai, 2009). Perhaps someone more engaged with music would seek out ways to use SNS for music-related activities specifically. This might be demonstrated in a user sharing a greater amount of music-related content, or seeking to establish an online relationship with their favorite musicians, as is possible by using SNSs.

Additionally, fandom can be considered as consumption behavior, as it is through consumption of mass media that consumers shape their fan interests and identities. A fan is a consumer of one (or more) particular cultural commodities, accumulating cultural capital (Gray et al., 2007; Hills, 2002). Therefore, the application of several concepts from consumer psychology may be a fruitful approach to understanding SNS music fan practices. It is possible, then, that music-driven SNS fan practices are related to consumer variables, such as opinion leadership (i.e., the extent to which individuals share domain-specific information with other consumers, so that the latter regard the former as reliable guides; Tepper & Hargittai, 2009) or innovativeness (i.e., the extent to which a consumer is willing

to be among the first to try a new product; Lim & Lee, 2010). For example, in the specific domain of music discovery, people considered opinion leaders were more likely to use peer-to-peer services than those who are not opinion leaders (Tepper & Hargittai, 2009). Prior research shows that innovativeness relates to the ownership of new consumer electronic devices (Im et al., 2003; Lim & Lee, 2010) and that it moderates technology adoption (Agarwal & Prasad, 1998; Yi et al., 2006). Moreover, individual playfulness and personal innovativeness increase the frequency of using mobile telephone functions and applications (Mahatanankoon, 2007). Therefore, the present research considers opinion leadership, innovativeness, and related constructs (such as playfulness and ease of use) as potentially significant variables in explaining music fan practices, without prescribing to a technology model specifically.

Likewise, self-perception may be related to the use of music in SNS and online music fandom. Specifically, because self-efficacy is dependent on one's beliefs about being capable to perform certain tasks, it is an important aspect of information seeking and exploration (Chiou & Wan, 2007; Mathwick & Rigdon, 2004) that may be relevant also in SNS contexts. Moreover, self-efficacy is related to the level of profile detail provided by an SNS user and style of profile picture (Krämer & Winter, 2008), indicating that it is related to how people present themselves when using social media. When comfortable with operation methods, users will explore and learn more functions of a device (Kang & Yoon, 2008), which could translate into using different features of SNS platforms for fan practices. There is also some, albeit limited, evidence that self-esteem is associated with SNS gratifications: for example, SNS use serves to reduce barriers to interacting with acquaintances for students with lower self-esteem (Steinfield, Ellison, & Lampe, 2008). Attachment styles, which are the dynamics of relationships between people, may also be related to online fandom behaviors. SNS use may differ among individuals high in attachment anxiety or avoidance, such that individuals with high attachment anxiety are more likely to use Facebook (Oldmeadow, Quinn, & Kowert, 2013). The mediated online social interactions may be attractive to individuals with attachment insecurities, in that they could use the site to feel closer to individuals, including the musicians they adore.

Other studies have examined personality characteristics associated with SNS usage (for a review relevant to Facebook, see Nadkarni & Hofmann, 2012), thus offering another psychological variable to consider. Focusing on SNS gaming in particular, Muscanell and Guadagno (2012) found that men low in openness to experience reported playing SNS games more often than men who were high in openness. Thus, various personality dimensions may explain music-related SNS behaviors, such that the same pattern concerning playing SNS games might apply to SNS music practices. As extraversion has been associated with higher levels of SNS use and socially motivated use (Nadkarni & Hofmann, 2012), there is the possibility that individuals higher in extraversion are more likely to embrace SNS in order to engage in online fan practices.

Fandom can be considered as a group phenomenon, constituting an important component (and often even the entirety) of a shared group identity (Booth, 2010). As such, we expect a music-based identity to be a relevant component of SNS music practices. In particular, one way people communicate information about their identity is by telling others about the music they listen to (Rentfrow & Gosling, 2003): music preferences are commonly displayed on individuals' SNS profiles, and there are numerous applications that display a user's listening habits to other people (Rentfrow, McDonald, & Oldmeadow, 2009). SNS afford users the opportunity to develop and create their identity through public, music-related SNS actions and membership of musically-defined groups (Liu, 2008; Subrahmanyam, Reitch, Waechter, & Espinoza, 2008). Thus, a person who considers music to be important to their identity may likely utilize SNS features in order to express that aspect of their identity.

Lastly, more general research on interest in celebrities might explain SNS music fan practices. SNS serve a surveillance function (Joinson, 2008), such that people are able to read, follow, and track what other users share on the sites. This includes friends and acquaintances as well as celebrities. Thus SNS can be used to discover information about celebrities, and even to allow interaction with those celebrities who participate via different SNS platforms. However, it is intriguing that such interactions have not been well researched. Prior research using the Celebrity Attitude Scale (McCutcheon, Lange, & Houran, 2002) has shown a difference between mundane interest in celebrities that facilitates social interaction

and provides entertainment and an unhealthy preoccupation with a celebrity or other public figure (Sheridan, Maltby, & Gillett, 2006). More detailed work utilizing this scale has explored celebrity attitudes in terms of personality (e.g., Maltby, McCutcheon, & Lowinger, 2011), self-esteem (North, Sheridan, Maltby, & Gillett, 2007), and attachment (McCutcheon, Scott Jr, Aruguete, & Parker, 2006). It is possible that interactions with musicians on SNSs involve similar concepts. It is quite possible that fans' interest in musicians (as celebrities) motivates SNS use so that the former can follow and interact with the latter, but the extent to which this stems from an entertainment-driven interest rather than something more pathological is unclear.

9.2 Aim and Research Questions

The aim of this study was to identify the extent to which psychological and other variables could predict people's everyday music interactions in the context of SNSs. In particular, interest was placed on investigating the practice of utilizing SNSs in order to discover information about and interact with musicians. Accordingly, we investigated individual differences (in personality, identity, celebrity attitudes, self esteem, and attachment) and consumer psychology constructs relative to SNS, as well as actual technology usage, in relation to three research questions concerning individual use of SNS for interaction between fans and musicians. The research questions were:

RQ1: To what extent can technology usage variables and psychological variables predict the use of SNS for interacting with musicians in particular?

RQ2: Can the opinion that musicians should use social media to interact with their fans be predicted by technology behaviors and/or psychological variables?

RQ3: Can technology behaviors and/or psychological variables predict the belief that SNS interactions with musicians have an influence on the experience of listening to that musician's music?

9.3 Method

9.3.1 Participants.

Participants were recruited via advertising on the author's website, the university's student research participation program, and dedicated online research participation websites. Analyses were performed using the data from 239 individuals who resided in the United States and United Kingdom (41.40% U.S., 58.60% U.K.). As North and Davidson (2013) discussed that the uses of music can vary by world region, country of residence was included as a variable in the analyses. An additional 29 participants who resided in other countries completed the survey, but this data was excluded from the analyses. The sample was predominantly female (74.50%) with ages ranging from 16-59 years (M = 21.57, Mdn = 20, SD = 6.53), and 16.70% of the sample had a university qualification. Participation was voluntary: some current university students received coursework credit and the remaining participants received no compensation for their participation.

9.3.2 Measures.

Participants reported their age, sex, whether they had a university degree, and their country of residence. They indicated the importance of technology and music in their lives (hereafter referred to as "technology importance rating" and "music importance rating") on seven-point scales (anchored by *Not at all* and *Extremely*) and stated how many hours they listened to music and interacted with technology during a typical day (as a measure of engagement).

9.3.2.1 Personality. Langford's (2003) Big 5 proxy scale was used because of its concise nature and demonstrated reliability (Langford, 2003; North, 2010). This measure requires participants to rate themselves on one seven-point scale (anchored by adjectives) for each Big Five dimension: openness (*uncreative-creative*), conscientiousness (*lazy-hard-working*), extraversion (*shy-outgoing*), agreeableness, (*headstrong-gentle*) and neuroticism (*nervous-at ease*).

9.3.2.2 Identity. The author-developed identity measure (also used in Chapters 4, 5, 7, and 8) was used to determine whether music and/or technology played a role in the participants' conceptions of their identity. Participants rated the extent to which music, technology, music technology, and cloud-based technology

were each central to their identity using seven-point scales (anchored by *Not at all* and *Completely*).

9.3.2.3 Self-esteem. Individuals completed Rosenberg's (1989) 10-item self-esteem measure, by indicating the extent that they agreed with a series of statements about themselves using four-point Likert scales (*Strongly disagree* to *Strongly agree;* Cronbach's alpha = .89).

9.3.2.4 Attachment. The Experiences in Close Relationships-Revised Shortened questionnaire (Fraley, Heffernan, Vicary, & Brumbaugh, 2011) assessed attachment with regard to both best friend and dating/marital partner relationships, which has demonstrated high reliability even with the small number of items (Fraley, et al., 2011). Individuals completed the attachment-related anxiety and attachment-related avoidance scales, each employing nine items, using seven-point scales (anchored by *Not at all* and Completely agree), resulting in four scores per individual.

9.3.2.5 Celebrity attitudes. A nine-item shortened Celebrity Attitude Scale was created by using the three highest-loading statements from the three subscales (entertainment-social, intense-personal, and borderline pathological) identified by North and Sheridan (2009). Therefore, the three subscales were represented in a manner to avoid over-burdening participants when considering the length of the questionnaire. "Favorite musician" replaced "celebrity," in the wording of the items (see Table 9.3). Participants responded to statements using a five-point scale (anchored by *Strongly disagree* and *Strongly agree*).

9.3.2.6 Consumer psychology variables. Adapted from the measure used in Chapters 7 and 8, participants were presented with 26 items drawn from the consumer psychology literature on attitudes towards and usage of social networks. Participants responded using five point scales (anchored by Not at all and Very well) to items which concerned opinion leadership (e.g., "I usually provide information about new SNS to others"); innovativeness (e.g., "I know about new SNS before other people"); individual playfulness (e.g., "I have fun interacting with SNS"); computer self-efficacy and anxiety (e.g., "I can figure out SNS without help"); perceived ease of use and usefulness (e.g., "I find SNS useful"); and the behavioral intention to continue using social networks (e.g., "I plan to use SNS in the future"). (All 26 items are included in Table 9.2.)

9.3.2.7 Technology Usage. Participants were asked to report the percentage of their time on SNSs passively reading about musicians, the percentage of time actively interacting with or posting about musicians on SNSs, the percentage of their SNSs contacts that were specifically musicians (as opposed to friends or other celebrities), and an average estimate of time in minutes spent on SNSs related to following and interacting with musicians daily. Lastly, participants rated their agreement with nine statements on five-point scales (anchored by Not at all and Completely) concerning whether they thought social networking was beneficial to the user in terms of knowledge, opinions, and enjoyment of musicians and their music (e.g., "being able to interact with/follow a musician using social networks enhances my experience with their music" and "musicians should use social networks as a way of interacting with their fans;" all items are listed in Table 9.4).

9.3.3 Procedure.

Participants were made aware of the study via advertising on the author's website, the university's student research participation program, and on dedicated online research participation websites. These websites contained a direct link to the online questionnaire. Individuals were guided through the questionnaire via a series of webpages after indicating their consent, and debriefed via a final page of the survey.

9.4 Results and Discussion

Prior to analyses, improvements to univariate normality for non-normal predictor variables were made with algebraic transformations (see Appendix R for further information).

9.4.1 Participants.

On the whole, the sample reported that music was important in their lives (M = 5.71, Mdn = 6, SD = 1.28). This was also true for ratings of the importance of technology (M = 5.77, Mdn = 6, SD = 1.21). Similarly, the number of hours that participants' interacted with music (M = 4.05, Mdn = 3, SD = 3.43) and technology (M = 8.02, Mdn = 6.75, SD = 4.64) on an average day also indicated high engagement via frequent usage.

9.4.2 Preliminary principal component analyses.

9.4.2.1 Identity. As shown in Table 9.1, one factor resulted from a varimax rotation principal components analysis, on which all four identity statements loaded positively, accounting for 60.18% of variance. Consistent with the other research using this measure, Cronbach's alpha was .77; and this one-dimensional identity was labeled as a "music-technology based identity."

Table 9.1.

Identity Statements Principal Components Loadings

Identity Statement	Loading
Music technology is central to my identity.	0.86
Technology is central to my identity.	0.82
Web-based Cloud technology is central to my identity.	0.71
Music is central to my identity.	0.70
Eigenvalue	2.41
% Variance Explained	60.18

9.4.2.2 Consumer psychology variables. A second analysis was performed on the ratings of consumer psychology statements. Varimax rotation revealed six factors, which accounted for 57.72% of the variance (see Table 9.2). These factors are referred to as "the consumer psychology factors" in further analyses and individually were labeled as "embraced use," "confident use," "trail blazer," "early adoption," "confused use," and "basic use" respectively. Cronbach's alphas, respectively, were .85, .69, .77, .76, .70, and .50, indicating sufficient internal consistency given the number of items in the scales (Loewenthal, 2001; Tabachnick & Fidell, 2007). As such these groupings did not reflect opinion leadership and innovativeness as prior research has defined these distinct constructs, but rather as six different, broad approaches to using SNS (which are based on the consumer psychology constructs).

Table 9.2.

Loadings based on a Principal Components Analysis with Varimax Rotation for the Consumer Psychology Items

	Factors [a]					
Questionnaire item	1	2	3	4	5	6
I plan to use SNS in the future.	0.79					
I find SNS useful.	0.77					
I have fun interacting with SNS.	0.68		0.32			
When using SNS, I am playful and spontaneous.	0.52		0.46			
I feel confident using SNS.	0.42	0.54	0.35			
My opinions about SNS do not seem to count with others.	-0.45					
SNS are not beneficial to me.	-0.61					
Using SNS bores me.	-0.61				0.43	
I do not intend to use SNS in the future.	-0.73					
I can figure out SNS without help.		0.77				
I find SNS easy to use.		0.73				
The range of SNS options available to me are overwhelming at times.		-0.40				0.40
I can use SNS only with help.		-0.55				
I find SNS intimidating.		-0.58			0.52	
I know about new SNS tools before other people.			0.79			
I usually provide information about new SNS to others.			0.60	0.34		
I like to find some new ways to use SNS.			0.55	0.44		
I often influence people's opinions about SNS.			0.50	0.30	-0.31	
Even if I haven't heard about it before, I will consider trying a new SNS.				0.84		
I regularly seek new social network experiences.				0.73		

In general, I am hesitant to try new SNS.				-0.50	0.39	0.33
I find using SNS frustrating.					0.70	
Other people rarely come to be for advice about SNS.					0.66	
In general, I am the last in my circle of friends to know about the latest SNS.					0.41	0.39
I like to keep things simple when using SNS.						0.67
I view SNS only as a tool to access information.						0.60
Eigenvalue	4.17	2.57	2.48	2.13	2.11	1.54
% Variance Explained	16.05	9.89	9.55	8.17	8.12	5.94

[a] Factor labels for the six factors respectively are embraced use, confident use, trail blazer, early adoption, confused use, and basic use.

Note. Social networks (SNS) were defined for the participants as: "web-based, user-generated content sites that provide platforms for information sharing, video sharing, photo sharing, and blogging. Examples of social networks include, but are not limited to, Facebook, Twitter, MySpace, LinkedIn, Blogger, YouTube, Bebo, Friendster, Google+, Wordpress, Tumblr, CouchSurfing, DailyMile, Flickr, Foursquare, and LastFM." Loadings < .3 are suppressed.

9.4.2.3 Celebrity attitudes. Because nine statements from the Celebrity Attitudes Scale were used, these items were subjected to a varimax principal components analysis, rather than assume that the three sub-scales pattern would hold true for our sample. The resulting two factors accounted for 61.40% of the variance (see Table 9.3). Factor 1, labeled as "entertainment," reflected a social, entertainment-related interest in celebrities (Cronbach's alpha = .83). Factor 2, on the other hand, reflected the borderline pathological interest in celebrity musicians and was labeled "borderline pathological" (Cronbach's alpha = .81). Both factors subsume elements of the "intense personal" form of celebrity attitudes identified in the original development of the scale.

Table 9.3.

Loadings for Principal Components Analysis With Varimax Rotation of the Celebrity Attitude Statements

	Factors	
Questionnaire statement	1: Entertainment	2: Borderline pathological
It is enjoyable to be with others who like my favourite musician.	0.84	
I like watching and hearing about my favourite musician when I am in a large group of people.	0.79	
I love to talk with others who admire my favourite musician.	0.76	
I have frequent thoughts about my favourite musician, even when I don't want to.	0.62	0.46
My favourite musician is practically perfect in every way.	0.60	0.46
It would be great if my favourite musician and I were locked in a room for a few days.	0.48	0.42
If my favourite musician saw me in a restaurant they would ask me to sit down and talk.		0.82
My favourite musician and I have our own code so we can communicate with each other secretly (such as over the TV or via special words on the radio).		0.80
If I walked through the door of my favourite musician's home without an invitation he or she would be happy to see me.		0.80
Eigenvalue	2.92	2.61
% Variance Explained	32.39	29.01

Loadings < .3 are suppressed.

9.4.2.4 Social media opinions and usage. The nine statements concerning whether participants considered social networking beneficial in terms of knowledge, opinions, and enjoyment of musicians and their music yielded two factors, accounting for 59.90% of the variance (Table 9.4). Factor 1 reflected the opinion that musicians should use social media and that the participants felt that their interactions with musicians on social media affected their listening experience, and thus was labeled "valued musician involvement" (Cronbach's alpha = .87). Factor 2, "social media irrelevance," represented the opinion that social media had no influence on an individual's listening experience (Cronbach's alpha = .63). These two factors are referred to hereafter as the SNS opinions factors.

The final varimax rotation principal components analysis concerning the four SNS usage responses resulted in two factors, which accounted for 73.10% of the variance (Table 9.5). Factor 1, "musician interaction," represented individuals spending time interacting with musicians via social media (Cronbach's alpha = .69). In contrast, factor 2, "surveillance," concerned a general passive use of SNS—characterized by consuming rather than actively creating content. These two factors are referred to hereafter as the social media behavior factors.

Table 9.4.

Varimax Rotated Solution for the Principal Components Analysis of the Opinion Statements

	Factors	
Statement	1: Valued musician involvement	2: Social media irrelevance
Musicians should use social networks as a way of interacting with their fans.	0.81	
Being able to interact with/ follow a musician using social networks enhances my experience with their music.	0.81	
Musicians should use social networks as a way of providing information to their fans.	0.80	

Without using social networks, I would be missing out on valuable information about my favorite musicians.	0.77	
Social networks allow me to connect with other fans of the musicians I like.	0.76	
Reading the information a musician shares on social networks has an impact on my opinion of them as a musician.	0.69	
Reading the information a musician shares on social networks has no influence on my experience of their music.		0.85
Reading the information a musician shares on social networks does not have an influence on my opinion of them as a person.		0.76
It makes no difference on my enjoyment of their music whether a musician uses social networks.		0.64
Eigenvalue	3.60	1.80
% Variance Explained	39.95	19.94

Note. Loadings < .3 are suppressed.

Table 9.5.

Loadings for Principal Components Analysis With Varimax Rotation of the Social Media Behaviors Items

Questionnaire Item	Factors	
	1: Musician interaction	2: Surveillance
Of the people you interact with using social networks, what percentage of these individuals are musicians?	0.84	

Of the time you spend using social networks how many minutes (on an average day) are you interacting with/ following musicians?	0.80	
Of the time you spend using social networks, what percentage are you interacting with/following/reading/posting about musicians?	0.75	
Of the total amount of time you spend using social networks, what percentage of time do you spend reading/following along (as opposed to actively posting information yourself)?		0.99
Eigenvalue	1.91	1.02
% Variance Explained	47.74	25.37

Note. Loadings < .3 are suppressed.

9.4.3 Interacting with musicians via social media.

Two hierarchical multiple regression analyses (α = .025) addressed which variables could predict using social media to interact with musicians. Scores on the two social media behavior factors, musician interaction and surveillance, were each entered as the criterion variables in separate analyses. However, bivariate correlations were conducted first between the predictor variables and criterion variables. Only predictor variables demonstrating significant correlations (α = .05) were retained for use in the hierarchical multiple regressions (see Table 9.6).

Table 9.6.

Summary of Bivariate Correlations Concerning the Potential Predictor Variables and Outcome Variables

Variable	Musician interaction score	Surveillance score	Valued musician involvement score	Social media irrelevance score

Sex	*r*	.04	.06	-.04	-.02
	N	213	213	236	236
Age	*r*	-.07	-.12	-.02	.01
	N	213	213	236	236
Country of residence	*r*	-.04	-.01	-.13*	.07
	N	213	213	236	236
University qualification	*r*	.08	.13	.02	-.04
	N	211	211	233	233
Music importance rating	*r*	.29**	.18**	.16*	.12
	N	212	212	235	235
Technology importance	*r*	-.07	-.07	.19**	-.03
rating	*N*	212	212	235	235
Average daily listening	*r*	.36**	.01	.14*	.13
(hours)	*N*	211	211	234	234
Average daily technology use	*r*	.12	-.16*	.08	-.08
(hours)	*N*	211	211	233	233
Embraced use (CP factor 1)	*r*	.14*	.11	.28**	.02
score	*N*	213	213	236	236
Confident use (CP factor 2)	*r*	-.05	.09	.04	.14*
score	*N*	213	213	236	236
Trail blazer (CP factor 3)	*r*	.14*	-.17*	.23**	-.03
score	*N*	213	213	236	236
Early adoption (CP factor 4)	*r*	.15*	.08	.28**	-.07
score	*N*	213	213	236	236
Confused use (CP factor 5)	*r*	.10	.13	-.01	.23**
score	*N*	213	213	236	236
Basic use (CP factor 6) score	*r*	.12	.09	.14*	.12
	N	213	213	236	236
Openness	*r*	.19**	-.12	.15*	.11
	N	212	212	235	235
Conscientiousness	*r*	.01	-.15*	.12	.05
	N	212	212	235	235
Extraversion	*r*	.00	-.01	-.01	-.05

	N	211	211	234	234
Agreeableness	*r*	.00	-.03	-.03	.15*
	N	212	212	235	235
Neuroticism	*r*	.03	-.03	.04	.11
	N	212	212	235	235
Identity score	*r*	.25**	-.09	.31**	-.06
	N	211	211	234	234
Self-esteem score	*r*	.02	-0.01	0.02	-.06
	N	212	212	235	235
Entertainment celebrity	*r*	.31**	.17*	.41**	.11
attitudes score	*N*	208	208	231	231
Borderline pathological	*r*	.11	-.19**	.13*	-.04
celebrity attitudes score	*N*	208	208	231	231
Best friend avoidance score	*r*	-.06	-.15*	-.16*	-.01
	N	211	211	235	235
Best friend anxiety score	*r*	.06	-.04	.02	.01
	N	211	211	235	235
Partner avoidance score	*r*	.01	-.14*	-.12	-.05
	N	210	210	234	234
Partner anxiety score	*r*	.04	-.04	-.03	.08
	N	210	210	234	234
Musician interaction score	*r*		.02	.44**	.07
	N		213	212	212
Surveillance score	*r*	.02		-.05	-.01
	N	213		212	212
Valued musician involvement score	*r*	.44**	-.05		-.01
	N	212	212		236
Social media irrelevance	*r*	.07	-.01	-.01	
score	*N*	212	212	236	

Note. The following variables were coded as follows: gender (*females* = 1, *males* =2, country of residence (*US* = 1, *UK* = 2), and university qualification (*no* = 0, *yes* = 1); CP = consumer psychology.

* p <.05, ** p < .01, *** p < .001

The analysis of musician interaction scores employed the music importance rating and daily average listening hours on step 1; and the embraced use, trail blazer, and early adoption consumer psychology factor scores, openness personality rating, identity factor score, the entertainment celebrity attitudes score, and the valued musician involvement opinion score on step 2. All of the predictor variables in combination explained 30.7% of the variance, R^2 = .31, adjusted R^2 = .28, F (9, 192) = 9.47, p < .001; f^2 = .44 (details are reported in Table 9.7). Those who spent time on social media interacting with musicians listened to more hours of music daily. Valuing musicians' involvement on SNS was also positively associated with this behavior. Thus, higher engagement with music (as measured by spending more time listening) and finding value in musicians using SNS is indicative of behaviorally using SNS to interact with musicians.

Table 9.7.

Hierarchical Multiple Regression Analyses Predicting Musician Interaction Scores

Model	Predictor variable	Beta	95% CI	sr^2
1	Music importance rating	0.17	[0.01, 0.05]	.023
	Average daily listening (hours)	0.28***	[0.13, 0.40]	.063
R^2	0.16			
F	(2, 199) = 18.20***			
2	Music importance rating	0.06	[-0.02, 0.04]	.002
	Average daily listening (hours)	0.28***	[0.13, 0.38]	.057
	Embraced use (CP factor 1) score	0.04	[-0.13, 0.23]	.001
	Trail blazer (CP factor 3) score	-0.03	[-0.13, 0.09]	.000
	Early adoption (CP factor 4) score	0.00	[-0.03, 0.03]	.000
	Openness	0.11	[-0.01, 0.14]	.012
	Identity score	-0.01	[-0.04, 0.03]	.000
	Entertainment celebrity attitudes score	0.08	[-0.02, 0.05]	.004

	Valued musician involvement score	0.34***	[0.28, 0.69]	.076
ΔR^2	0.15			
ΔF	(7, 192) = 6.05***			

Note. CP = consumer psychology; *CI* = confidence interval.

* p <.05, ** p < .01, *** p < .001

The second analysis concerned the surveillance behavior score, indicative of passively using SNS. The music importance rating and daily average technology hours were entered on step 1; the trail blazer consumer psychology factor score, conscientiousness rating, both celebrity attitudes factor scores, and the best friend and partner anxiety attachment scores were entered on step 2. Overall the predictor variables explained 15.5% of the variance concerning surveillance, R^2 = .16, adjusted R^2 = .12, F (8, 195) = 4.48, p < .001; f^2 = .18 (details in Table 9.8). In addition to the music importance rating score, the conscientiousness personality variable predicted surveillance scores. Individuals who scored lower on the conscientiousness personality scale were more likely to demonstrate higher surveillance scores, perhaps illustrating that consuming information requires less effort than contributing actively on SNS. While prior research has indicated that passive surveillance is more common than actively creating content on SNS (e.g., Joinson, 2008), this result suggests that conscientiousness may underpin such behavior.

Table 9.8.

Hierarchical Multiple Regression Analyses Predicting Surveillance Scores

Model	Predictor variable	Beta	95% CI	sr^2
1	Music importance rating	0.19	[0.01, 0.04]	.039
	Average daily technology use (hours)	-0.15	[-0.17, -0.01]	.021
R^2	0.06			
F	(2, 201) = 6.75**			
2	Music importance rating	0.18*	[0.00, 0.04]	.025
	Average daily technology use (hours)	-0.13	[-0.16, 0.01]	.015
	Trail blazer (CP factor 3) score	-0.14	[-0.16, 0.00]	.016

	Conscientiousness	-0.14*	[-0.03, 0.00]	.018
	Entertainment celebrity attitudes score	0.06	[-0.01, 0.03]	.003
	Borderline pathological celebrity attitudes score	-0.11	[-0.22, 0.02]	.011
	Best friend avoidance score	-0.12	[-0.05, 0.01]	.011
	Partner avoidance score	-0.08	[-0.04, 0.01]	.005
ΔR^2	0.16			
ΔF	(6, 195) = 3.56**			

Note. CP = consumer psychology; CI = confidence interval.

* p <.05, ** p < .01, *** p < .001

9.4.4 Predicting opinions about musicians and social networks.

Research question 2 concerned whether psychological variables could predict the opinion that musicians should use SNS to interact with fans, while research question 3 focused on the opinion that such SNS musician-fan interactions would influence the experience of listening to that musician's music. However, these two opinions loaded onto a single factor, labeled valued musician involvement. Therefore, both research questions were examined concurrently: a pair of hierarchical multiple regressions were performed with valued musician involvement and social media irrelevance as the criterion variables. Again, significant bivariate correlations (Table 9.6) identified relevant predictor variables for the hierarchical multiple regressions.

Regarding valuing musicians' social media use, country of residence was entered on step 1; music importance rating, technology importance rating, daily average listening hours, and the musician interaction behavior score on step 2; and the embraced use, trail blazer, early adoption, and basic use consumer psychology scores, openness personality rating, identity factor score, the two celebrity attitudes factor scores, and the best friend avoidance attachment score were entered on step 3. In combination, the predictor variables explained 44.4% of the variance, R^2 = .44, adjusted R^2 = .40, F (14, 186) = 10.61, p < .001; f^2 = .80 (see Table 9.9). Technology importance ratings and the music interaction behavior factor were positively

associated with the valued musician involvement opinion. Furthermore, the significant psychological predictor variables indicate that scoring highly for trail blazer and early adoption SNS use and taking a social interest in musicians correspond to valuing musician social media use. Individuals taking an interest in celebrities would reasonably be expected to appreciate musicians who use SNSs, as this would aid in their ability to locate information and create interaction opportunities. Moreover, it seems reasonable that individuals embracing SNS use (as characteristic of the trail blazer and early adoption consumer psychology factors) would also support others using it, since social interaction and communication are common reasons for use.

Table 9.9.

Hierarchical Multiple Regression Analysis Predicting the 'Valued Musician Involvement' Opinion

Model	Predictor variable	Beta	95% CI	sr2
1	Country of residence	-0.10	[-0.08, 0.01]	.010
R^2	0.01			
F	(1, 199) = 1.97			
2	Country of residence	-0.06	[-0.06, 0.02]	.004
	Music importance rating	0.10	[0.00, 0.03]	.008
	Technology importance rating	0.21**	[0.01, 0.05]	.043
	Average daily listening (hours)	-0.07	[-0.14, 0.05]	.004
	Musician interaction score	0.43***	[0.21, 0.40]	.158
ΔR^2	0.24			
ΔF	(4, 195) = 15.52***			
3	Country of residence	0.03	[-0.03, 0.05]	.001
	Music importance rating	-0.06	[-0.02, 0.01]	.002
	Technology importance rating	0.13*	[0.00, 0.03]	.012
	Average daily listening (hours)	-0.12	[-0.17, 0.01]	.010
	Musician interaction score	0.29***	[0.12, 0.29]	.064
	Embraced use (CP factor 1) score	0.16	[0.04, 0.27]	.020
	Trail blazer (CP factor 3) score	0.13*	[0.00, 0.14]	.012
	Early adoption (CP factor 4) score	0.24***	[0.02, 0.05]	.050

	Basic use (CP factor 6) score	0.08	[-0.01, 0.03]	.005
	Openness	0.03	[-0.03, 0.06]	.001
	Identity score	0.07	[-0.01, 0.04]	.003
	Entertainment celebrity attitudes score	0.28***	[0.02, 0.06]	.052
	Borderline pathological celebrity attitudes score	0.12	[0.00, 0.21]	.012
	Best friend avoidance score	-0.08	[-0.04, 0.01]	.005
ΔR^2	0.20			
ΔF	(9, 186) = 7.26***			

Note. Country of residence was coded *US* = 1, *UK* = 2; CP = consumer psychology; *CI* = confidence interval.

* p <.05, ** p < .01, *** p < .001

From the bivariate correlations (Table 9.6), only three predictor variables (confident SNS use, confused SNS use, and agreeableness) were retained to examine the social media irrelevance factor. Thus a standard multiple regression was performed, which produced a significant result, R^2 = .10, adjusted R^2 = .09, F (29, 163) = 8.46, p < .001; f^2 = .11. Confused use (β = .24 [0.12, 0.38], p < .001, sr^2 = .056) and confident SNS use (β = 0.15 [0.08, 0.94], p < .05, sr^2 = .022) were both positively associated with the opinion that social media is irrelevant to music. This suggests a U-shaped relationship between a belief that social media are irrelevant to music and the degree of confusion/confidence in use of SNS: those at the extremes find social media irrelevant to music, whereas those in the middle display an interest in using it in relation to music. Scores on the agreeableness personality trait were also positively associated with a belief that social media are irrelevant to music (β = 0.15 [0.01, 0.18], p < .05, sr^2 = .021). While it is not possible to be sure of the cause of this relationship, one possibility is that those scoring highly on this personality trait regard music as a distraction from the content of social media that directly promotes interpersonal interaction.

9.5 Conclusion

This study contributes to the literature by demonstrating that SNS music fan behaviors have a psychological component. By focusing on the individual component of the reciprocal feedback model, this research identified variables related to the individual that predicted SNS music fan practices. Overall, it is interesting that while previous research has implicated variables such as sex, age, and identity in music practices, these particular variables did not predict music-specific SNS behaviors or opinions. The results did indicate, though, that a confident approach to SNS and valuing musician involvement contributed to explaining music-related SNS behaviors. Additionally, how one approaches technology (conveyed via the consumer psychology constructs) as well as a social interest in celebrities predicted opinions about musician involvement on SNS. These particular variables are, therefore, important to consider in terms of the individual in the reciprocal feedback model.

By indicating that self-efficacy, consumer attitudes, and personality are important features of the individual to consider, this study serves as a foundation for future work. As SNS features and functions continue to evolve, usage will likely become correspondingly complex, and this complexity will likely require a thorough understanding of individual difference factors that drive idiosyncratic usage patterns. It will be important to continue to consider the individual. However, a stronger, unified understanding of SNS fan behaviors will also require the consideration of the music and situation (i.e., the other features of the reciprocal feedback model).

While this study considered social media use broadly, each individual SNS is unique and, consequently, may be used differently. Therefore, in addition to broadly considering peoples' cumulative use of social media, it is important to consider specific SNSs, as well as the individual features of particular SNSs. Therefore, music practices performed on the popular SNS, Facebook, are the subject of the next chapter.

Chapter 10: Music Fan Practices on Facebook[9]

Different social media sites enable different fan practices, and there is considerable variation between individuals in degree and type of use associated with a particular SNS. Researchers, thus, advocate that a deeper understanding of SNS use would arise from consideration of usage of specific features of an SNS (Baek, Holton, Harp, & Yaschur, 2011; Smock, Ellison, Lampe, & Wohn, 2011). Therefore, while Chapter 9 considered fan interaction and SNS use broadly (without reference to a particular site), this study focused specifically on music fan practices performed on the popular website Facebook.

Facebook, originally launched as a means for college students to interact (Baek, et al., 2011) had over one billion active monthly users in 2012 (Fowler, 2012). Users include information and links as a part of their profile (a display of personal data associated with a certain user), post on people's walls (a space on the profile where messages can be displayed), and send messages to other users. Many people share music through these means, using links to websites and videos (Mesnage et al., 2011). Moreover, in 2011, Facebook initiated their "open graph," which allowed users to enable third-party applications (apps) to publish activity to Facebook (San Pascual, 2013). This change allowed users to easily display their music listening history, share song links, and (depending on the application) even join in on friends' listening sessions. After only a year, 62.6 million songs had been involved in 22 billion plays (Kirn, 2012). This type of access adds to the arsenal of existing methods of accessing music and represents a significant development in

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[9] *Note*. Material used in this chapter also appears as Study 2 in a manuscript submitted for publication. This chapter reflects the revised version, which is currently under review. Co-author contribution statements are located in Appendix B.

Krause, A. E., North, A. C., & Heritage, B. (2014). Psychological correlates of music fan practices on social networking sites. *Manuscript submitted for publication.*

both music discovery and recommendation. Moreover, these actions can clearly be considered as SNS music fan practices, and arguably among the most prevalent individual music fan activities of the second decade of the 21st century.

10.1 Variables of Interest

As in Chapter 8, the research was carried out in the context of the reciprocal feedback model with particular reference to variables associated with the individual. As such, the variables of interest include demographic factors (age, sex, music engagement), identity, consumer psychology constructs, and personality traits, as highlighted earlier and investigated in Chapter 8. Furthermore, because research has shown that self-efficacy has a positive effect on a person's attitude toward SNS (Gangadharbatla, 2008), self-efficacy could also be particularly predictive of performing fan practices on Facebook.

Thus, this study examined the importance of psychological variables relative to demographic variables and technology use in describing Facebook music fan practices, including usage of music listening applications. As fandom research has moved towards researching what fan practices can tell us about fans situated in modern, technological, daily life (Gray et al., 2007), music-related behaviors performed on Facebook are a perfect topic of study. Therefore, this research approaches Facebook fan practices from a psychological perspective, with two guiding research questions:

RQ1: What variables pertaining to the individual are related to performing music-related tasks on Facebook?

RQ2: What variables pertaining to the individual are related to the specific use of music applications via the Facebook platform?

10.2 Method

10.2.1 Participants.

211 Residents of the United States and United Kingdom (64.50% U.S., 35.50% U.K.) completed the questionnaire (although data from an additional 40 participants was excluded as they resided in various other countries). Again, country of residence was treated as a variable in the analyses. Ages ranged from 16-

68 years (*M* = 22.86, *Mdn* = 20, *SD* = 7.71), 71.60% of the sample was female, and 21.80% of the participants had university qualifications.

Participants were recruited online via the author's website, the university's student research participation program, and dedicated research participation websites. Again, participation was voluntary: some university students received course credit for their participation, while the remaining participants were not compensated.

10.2.2 Measures.

Participants completed the same demographic questions, the four identity statements, and Langford's (2003) Big 5 proxy scale as per Chapter 9.

10.2.2.1 Consumer psychology variables. Participants responded to the same 26 consumer psychology statements regarding SNSs as in Chapter 9. However, in addition, these constructs were assessed in relation to a second domain, namely "digital listening technology," using the 26-item measure described in Chapter 7. For both sets of statements, participants marked their agreement using five-point scales (anchored by *Not at all* and *Very well*).

10.2.2.2 Self-efficacy. To maintain specificity for accurately measuring self-efficacy related to technology tasks (Bandura, 1997), Spreitzer's (1995) measure was adapted to address five specific actions, namely using digital technology to listen to music, using web-based cloud music technology, general aspects of having and using a Facebook account, using Facebook applications, and using music applications within Facebook (e.g., Spotify and Pandora). Participants marked their agreement with three statements concerning whether they felt they "were confident about their ability," "had mastered the skills necessary," and "believed in their capabilities" on a five-point scale (anchored by *Not at all* and *Completely*). The ratings were summed separately for each of the five domains, resulting in five self-efficacy scores per participant. Cronbach's alpha for digital technology was .89, while the value for the each of the other four domains was .92.

10.2.2.3 Facebook use. Participants indicated minutes spent on Facebook on average daily, the percentage of their leisure time spent on Facebook, and the average percentage of the time using a Facebook music listening application while

on Facebook. They also rated how often they performed 15 different tasks on Facebook on a seven-point scale (1 = *I never spend time doing this* and 7 = *All of my time on Facebook is spent doing this*). Tasks included a range of common Facebook behaviors, such as viewing and posting messages, uploading and viewing photos, posting and following links as well as music specific habits, such as posting and watching music videos, interacting with pages devoted to musicians or concerts, and listening to music via a dedicated application (all items appear in Table 10.4).

10.2.3 Procedure.

Advertising of the study on the author's website, the university's student research participation program, and dedicated research participation websites contained direct links to the online questionnaire hosted on the author's website. After reading information about participation, individuals who agreed to take part completed the questionnaire as a series of webpages. Upon completion, participants were debriefed via a final webpage.

10.3 Results and Discussion

Prior to analyses, algebraic transformations of non-normal predictor variables were performed to improve univariate normality (see Appendix R for additional information).

10.3.1 Participants.

The majority of the sample reported that both music (M = 5.91, Mdn = 6, SD = 1.26) and technology (M = 6.01, Mdn = 6, SD = 1.06) were important in their lives. Similarly, the number of hours that participants' interacted with music and technology on an average day also indicated frequent use: on average, participants listened to music for 4.57 hours (Mdn = 3.50, SD = 3.45) and used technology for 8.59 hours (Mdn = 8, SD = 4.40) daily. Therefore, as in Chapter 9, both music and technology featured as common daily activities for individuals.

10.3.2 Preliminary principal components analyses.

10.3.2.1 Identity. Again, the single "music-technology based identity" factor resulted from a principal components analysis of the four identity statements (Cronbach's alpha = .79; see Table 10.1).

Table 10.1.

Identity Statements Principal Components Loadings

Identity Statement	Loading
Music technology is central to my identity.	0.89
Technology is central to my identity.	0.84
Music is central to my identity.	0.73
Web-based Cloud technology is central to my identity.	0.66
Eigenvalue	2.47
% of Variance	61.74

10.3.2.2 Consumer psychology variables. The varimax rotation of a principal components analysis of the 26 consumer psychology items revealed five factors regarding how individuals approached social networking websites. These factors accounted for 61.19% of the variance (details in Table 10.2), and were labeled "engaged use," "trail blazer," "troubled use," "uninterested use," and "hesitant use," respectively. This set of factor scores will be referred to as the "consumer psychology" factor scores. Cronbach's alphas, respectively, were .90, .89, .82, .68, and .53 respectively.

Table 10.2.

Loadings based on a Principal Components Analysis with Varimax Rotation for the Consumer Psychology Items

	Factors [a]				
	1	2	3	4	5
I find SNS useful.	0.78	0.34			
I plan to use SNS in the future.	0.78		-0.31		

I have fun interacting with SNS.	0.73	0.44			
When using SNS, I am playful and spontaneous.	0.64	0.45			
I like to find some new ways to use SNS.	0.39	0.62			
I feel confident using SNS.	0.38		-0.63		
Even if I haven't heard about it before, I will consider trying a new SNS.	0.35	0.66			
I usually provide information about new SNS to others.	0.32	0.75			
I find using SNS frustrating.	-0.35		0.61		0.33
SNS are not beneficial to me.	-0.64			0.46	
I do not intend to use SNS in the future.	-0.70		0.34		
Using SNS bores me.	-0.70				
I know about new SNS tools before other people.		0.80			
I often influence people's opinions about SNS.		0.75			
I regularly seek new social network experiences.		0.69			
In general, I am hesitant to try new SNS.		-0.40			0.62
I find SNS intimidating.			0.75		
I can use SNS only with help			0.63		
The range of SNS options available to me are overwhelming at times.			0.48		0.46
In general, I am the last in my circle of friends to know about the latest SNS.			0.35	0.59	
I find SNS easy to use.			-0.65		
I can figure out SNS without help.			-0.68		
My opinions about SNS do not seem to count with others.				0.73	
Other people rarely come to be for advice about SNS.				0.70	
I view SNS only as a tool to access information.				0.42	0.38
I like to keep things simple when using SNS.					0.63
Eigenvalue	4.50	4.14	3.41	2.11	1.76
% of Variance	17.31	15.90	13.11	8.11	6.77

[a] Factors labels are engaged use, trail blazer, troubled use, uninterested use, and hesitant use, respectively

Note. Social networks (SNS) were defined for the participants as: "web-based, user-generated content sites that provide platforms for information sharing, video sharing, photo sharing, and blogging. Examples of social networks include, but are not limited to, Facebook, Twitter, MySpace, LinkedIn, Blogger, YouTube, Bebo, Friendster, Google+, Wordpress, Tumblr, CouchSurfing, DailyMile, Flickr, Foursquare, and LastFM." Loadings < .3 are suppressed.

Five components resulted from a factor analysis of the 26 digital listening technology items, which accounted for 58.78% of the variance concerning how individuals approached digital listening technologies. Given the pattern of loadings in Table 10.3, the factors were labeled "engaged use," "trail blazer," "troubled use," "uninterested use," and "basic use," respectively. Cronbach's alphas were .86, .86, .72, and .64 respectively. Hereafter these factor scores are referred to as the "digital listening technology" factor scores. Again, rather than reflecting the consumer psychology constructs distinctly, there appear to be blended representations of different approaches towards SNS and digital listening technology, which subsume the consumer constructs measured.

Table 10.3.

Loadings for Principal Components Analysis With Varimax Rotation of the Digital Listening Technology Items

	Factors [a]				
Statements	1	2	3	4	5
I find DLT useful.	0.78				
I plan to use DLT in the future.	0.77				
I have fun interacting with DLT.	0.73	0.35			
When using DLT, I am playful and spontaneous.	0.56	0.48			
Even if I haven't heard about it before, I will consider trying a new DLT.	0.54	0.40			-0.37

I regularly seek new DLT experiences.	0.51	0.56			
I find DLT easy to use.	0.46		-0.61		
I feel confident using DLT.	0.46	0.40	-0.48		
I like to keep things simple when using DLT.	0.40	-0.41			0.52
I like to find some new ways to use DLT.	0.36	0.54			-0.33
DLT is not beneficial to me.	-0.33		0.39	0.51	
Using DLT bores me.	-0.41		0.33	0.37	0.31
I often influence people's opinions about DLT.		0.81			
I know about new DLT before other people.		0.78			
I usually provide information about new DLT to others.		0.67			
Other people rarely come to be for advice about DLT.		-0.48		0.58	
I find DLT intimidating.			0.76		
I find using DLT frustrating.			0.70		
I can use DLT only with help			0.58	0.33	
The range of DLT options available to me are overwhelming at times.			0.50		
In general, I am hesitant to try new DLT.			0.50		0.57
In general, I am the last in my circle of friends to know about the latest DLT.			0.46	0.42	
I can figure out DLT without help.			-0.54		0.39
I do not intend to use DLT in the future.				0.70	
My opinions about DLT do not seem to count with others.				0.65	
I view DLT only as a tool to access music.					0.70
Eigenvalue	4.10	3.68	3.45	2.13	1.92
% of Variance	15.78	14.13	13.28	8.19	7.40

[a] factor labels are engaged use, trail blazer, troubled use, uninterested use, and basic use, respectively.

Note. Digital listening technology (DLT) was defined for the participants as:Technology, applications, and devices that allow you to listen to music digitally. These include, but are not limited to, computer applications (such as iTunes, Winamp, etc.), mobile devices (such as MP3 players, phones, and tablets), Internet streaming applications (such as Internet radio stations, YouTube, Vevo, Pandora, etc.), and cloud-based applications (such as Spotify, Amazon, iCloud, etc.).

Loadings < .3 are suppressed.

10.3.2.3 Facebook use. Varimax rotation of the principal components analysis of ratings of the 15 Facebook actions revealed three factors (see Table 10.4), accounting for 65.49% of the variance. Factor 1 was labeled as "music tasks," factor 2 as "communication tasks," and factor 3 as "apps use." Cronbach's alpha values for these factors were .90, .88, and .77 respectively. Similar analysis of the three statements regarding time spent on Facebook resulted in one factor (see Table 10.5), labeled as "leisure use", which accounted for 52.08% of the variance. Scores on these factors are referred to hereafter as the "Facebook task" factor scores and "Facebook leisure use" score.

Table 10.4.

Loadings for Principal Components Analysis With Varimax Rotation of the Facebook Actions

	Factors		
Statement	1: Music tasks	2: Communication tasks	3: Apps use
Following links/watching videos related to music that friends have posted as part of their status	0.88	0.30	

Posting videos/links related to music/musicians as part of your status	0.87		
Following links/watching videos related to music that friends have posted on your wall/others' walls	0.84	0.32	
Posting videos/links related to music/musicians on people's walls	0.82		
Reading posts by friends regarding the music they've just listened to on an app within Facebook.	0.67		0.52
Interacting with pages/groups/events that pertain to musicians/bands/concerts	0.63		0.43
Listening to music via a Facebook app (i.e., Spotify, Pandora)	0.33		0.64
Posting on friends' walls		0.77	
Viewing/commenting on others' photos		0.77	
Viewing others' profile pages/walls		0.76	
Reading the news feed on my homepage		0.73	
Changing/updating my status		0.66	
Uploading/creating photo albums		0.65	0.48
Sending private messages		0.60	0.36
Playing Facebook games			0.70
Eigenvalue	4.13	3.81	1.89
% of Variance	27.5	25.38	12.61

Note. Loadings < .3 are suppressed.

Table 10.5.

Varimax Rotated Solution for the Principal Components Analysis of the Leisure Use Items

Statement	Loading
Average percentage of your leisure time do you spend on Facebook daily	0.82

Average length (minutes) on Facebook daily	0.79
Average percentage of the time that on Facebook includes using a music application (Spotify, etc.)	0.52
Eigenvalue	1.56
% of Variance	52.08

Note. Loadings < .3 are suppressed.

10.3.3 Facebook tasks.

To answer the first research question, whether the nature of the tasks that individuals perform on Facebook could be predicted by technology use and psychological variables, three individual hierarchical multiple regression analyses (α = 0.017) were performed on each of the three Facebook task factor scores. Bivariate correlations, performed first, established which predictor variables to include for each individual analysis (Table 10.6).

Table 10.6

Summary of Bivariate Correlations Concerning the Potential Predictor Variables and Outcome Variables

Variable		Music tasks score	Communication tasks score	Apps use score	Do you use a music app on Facebook?
Sex	*r*	.14*	-.10	-.02	-.10
	N	211	211	211	211
Age	*r*	-.05	-.09	-.03	.11
	N	211	211	211	211
Country of residence	*r*	-.13	.08	-.06	-.06
	N	211	211	211	211
University qualification	*r*	.04	-.03	-.05	.11
	N	210	210	210	210
Music importance rating	*r*	.39**	-.03	.10	-.11
	N	211	211	211	211

Technology importance rating	*r*	.22**	.18*	-.02	-.03
	N	210	210	210	210
Average daily listening (hours)	*r*	.21**	-.13	.26**	-.09
	N	207	207	207	207
Average daily technology use (hours)	*r*	.04	-.01	.03	.03
	N	207	207	207	207
Facebook leisure use score	*r*	.17*	.42**	.22**	-.24**
	N	188	188	188	188
Engaged DLT use (factor 1) score	*r*	.26**	.19**	.01	-.15*
	N	210	210	210	210
DLT trail blazer (factor 2) score	*r*	.26**	.01	.28**	-.10
	N	210	210	210	210
Troubled DLT use (factor 3) score	*r*	.08	.00	.12	.16*
	N	210	210	210	210
Uninterested DLT use (factor 4) score	*r*	-.03	.00	.23**	-.06
	N	210	210	210	210
Basic DLT use (factor 5) score	*r*	-.03	.09	-.14*	.08
	N	210	210	210	210
Engaged CP use (factor 1) score	*r*	.17*	.54**	-.1	-.15*
	N	208	208	208	208
CP trail blazer (factor 2) score	*r*	.22**	.23**	.31**	-.11
	N	208	208	208	208
Troubled CP use (factor 3) score	*r*	.05	-.11	.16*	.16*
	N	208	208	208	208
Uninterested CP use (factor 4) score	*r*	.08	-.09	.1	-.03
	N	208	208	208	208
Hesitant CP use (factor 5) score	*r*	.04	.08	-.1	.13
	N	208	208	208	208
Openness	*r*	.25**	-.05	.11	-.06
	N	211	211	211	211

Conscientiousness	*r*	-.01	-.02	.14*	-.07
	N	211	211	211	211
Extraversion	*r*	-.06	.22**	.17*	.10
	N	209	209	209	209
Agreeableness	*r*	.00	-.08	.1	-.04
	N	211	211	211	211
Neuroticism	*r*	.07	.02	.05	-.11
	N	210	210	210	210
Self-efficacy: digital technology	*r*	.12	.08	-.07	-.17*
to listen to music	*N*	209	209	209	209
Self-efficacy: web-based cloud	*r*	.20**	-.01	.12	-.19**
music technology	*N*	209	209	209	209
Self-efficacy: general Facebook	*r*	.13	.41**	-.05	-.23**
account	*N*	209	209	209	209
Self-efficacy: Facebook	*r*	.08	.24**	.23**	-.23**
applications	*N*	209	209	209	209
Self-efficacy: Facebook music	*r*	.21**	.09	.22**	-.45**
applications	*N*	209	209	209	209
Identity score	*r*	.40**	.18**	.18*	-.18**
	N	207	207	207	207

Note. The following variables were coded as follows: gender *(females* = 1, *males* = 2), country of residence (*US* = 1, *UK* = 2), and university qualification (*no* = 0, *yes* = 1); DLT = digital listening technology; CP = consumer psychology; CI = confidence interval.
* p <.05, ** p < .01, *** p < .001

For predicting music task scores, sex was entered on step 1; music importance rating, technology importance rating, daily average listening hours, and the Facebook leisure use factor score were included on step 2; and the engaged use and trail blazer digital listening technology scores, engaged use and trail blazer consumer psychology scores, openness personality rating, self-efficacy for using web-based cloud music technology, and identity score were entered on step 3. In combination, the variables explained 26.1% of the variance, R^2 = .26, adjusted R^2 =

.20; and this was significant, F (13, 160) = 4.35, $p < .001$, $f^2 = .35$ (see details in Table 10.7). Considering music to be important in one's life and scoring high on the leisure use factor were positively associated with music task scores; suggesting that music tasks are driven by an interest in music and spending time on Facebook. Logically, this appears to be an engagement-related category of behavior – people who value music in their lives likely want to share music-related information, and this sharing is easy via the Facebook platform. In terms of RQ1, the results imply that performing music tasks on Facebook is predicted by music and technology behaviors, rather than psychological constructs, as the third step of the model did not add to the amount of variance explained.

Table 10.7.

Hierarchical Multiple Regression Analysis Predicting Music Tasks

Model	*Predictor Variable*	*Beta*	*95% CI*	*sr²*
1	Sex	0.09	[-0.12, 0.52]	.009
R^2	0.01			
F	(1, 172) = 1.53			
2	Sex	0.04	[-0.21, 0.39]	.002
	Music importance rating	0.35***	[0.80, 2.15]	.089
	Technology importance rating	0.07	[-0.34, 0.93]	.004
	Average daily listening (hours)	0.04	[-0.17, 0.30]	.001
	Facebook leisure use score	0.17*	[0.16, 1.60]	.028
R^2	0.18			
ΔF	(4, 168) = 9.48***			
3	Sex	0.02	[-0.27, 0.34]	.000
	Music importance rating	0.27	[0.38, 1.88]	.041
	Technology importance rating	-0.03	[-0.82, 0.57]	.001
	Average daily listening (hours)	0.01	[-0.22, 0.26]	.000
	Facebook leisure use score	0.04	[-0.67, 1.04]	.001
	Engaged DLT use	0.08	[-0.25, 0.82]	.005
	Engaged CP use	0.08	[-0.10, 0.26]	.004
	CP trail blazer	0.11	[-0.38, 1.72]	.007

	Troubled CP use	0.01	[-0.58, 0.34]	.000
	Openness	0.07	[-0.20, 0.53]	.004
	Self-efficacy: web-based cloud music technology	0.05	[-0.04, 0.06]	.001
	Self-efficacy: Facebook music applications	0.06	[-0.13, 0.28]	.002
	Identity score	0.15	[-0.05, 0.33]	.010
R^2	0.07			
ΔF	(8, 160) = 1.88			

Note. Gender was coded as *females* = 1, *males* = 2; DLT = digital listening technology; CP = consumer psychology; *CI* = confidence interval.

* $p < .05$, ** $p < .01$, *** $p < .001$

In the analysis addressing communication tasks, predictor variables included the technology importance rating and Facebook leisure use factor score on step 1; and the engaged use digital listening technology scores, engaged use and trail blazer consumer psychology scores, extraversion personality rating, self-efficacy scores for using Facebook applications and Facebook generally, and identity score on step 2. The predictor variables explained 43.6% of the variance for communication tasks, $R^2 = .44$, adjusted $R^2 = .41$, F (9, 1366) = 14.27, $p < .001$; $f^2 = .77$ (details in Table 10.8). The results indicate that positive, significant associations existed for scoring highly on the engaged and trail blazer consumer psychology factors, the leisure use factor, and the general Facebook self-efficacy score. The extraversion personality rating was also positively associated with performing communication tasks: as extroverts enjoy interacting with others, it follows that they would perform Facebook communication tasks. Performing general communicative tasks, therefore, is associated with spending time engaged with SNS and being confident about SNS use. As music does not feature prominently in communication tasks, it follows that performing such tasks need not rely on musical engagement or a music-technology identity.

Table 10.8.

Hierarchical Multiple Regression Analyses Predicting Communication Tasks

Model	Predictor Variable	Beta	95% CI	sr^2
1	Technology importance rating	0.11	[-0.10, 1.11]	.013
	Facebook leisure use score	0.40	[1.37, 2.78]	.158
R^2	0.19			
F	(2, 173) = 20.44***			
2	Technology importance rating	0.06	[-0.33, 0.81]	.002
	Facebook leisure use score	0.15*	[0.06, 1.48]	.015
	Engaged DLT use	0.02	[-0.40, 0.52]	.000
	Engaged CP use	0.38***	[1.54, 3.34]	.097
	CP trail blazer	0.27***	[0.43, 1.40]	.048
	Extraversion	0.12*	[0.00, 0.61]	.013
	Self-efficacy: general Facebook account	0.27**	[0.34, 1.29]	.038
	Self-efficacy: Facebook music applications	-0.15	[-0.38, 0.01]	.012
	Identity score	-0.14	[-0.27, 0.01]	.012
ΔR^2	0.25			
ΔF	(7, 166) = 10.31***			

Note. DLT = digital listening technology, CP = consumer psychology; *CI* = confidence interval.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Predictor variables on step 1 of the analysis concerning apps use included the average hours listened to music daily and the Facebook leisure use factor score, and trail blazer, uninterested, and basic digital listening technology scores, trail blazer and troubled consumer psychology scores, conscientiousness and extraversion personality ratings, self efficacy for Facebook applications and music applications, and the music-technology identity score on step 2. Together, the predictor variables explained 23.8% of the variance, $R^2 = .24$, adjusted $R^2 = .18$, $F(12, 160) = 4.18$, $p < .01$; $f^2 = .31$ (see Table 10.9). Both the average daily listening and the uninterested digital listening technology score were positively associated

with apps use. As this apps use factor was not specific to using music apps, future research is better placed to investigate these associations.

Table 10.9.

Hierarchical Multiple Regression Analyses Predicting Apps Use

Model	Predictor Variable	Beta	95% CI	sr^2
1	Average daily listening (hours)	0.20	[0.02, 0.14]	.038
	Facebook leisure use score	0.21	[0.09, 0.48]	.043
R^2	0.1			
F	(2, 170) = 9.54***			
2	Average daily listening (hours)	0.18*	[0.01, 0.013]	.027
	Facebook leisure use score	0.12	[-0.05, 0.37]	.010
	DLT trail blazer	0.02	[-0.04, 0.05]	.000
	Uninterested DLT use	0.21**	[0.08, 0.38]	.042
	Basic DLT use	-0.07	[-0.20, 0.07]	.005
	CP trail blazer	0.15	[-0.03, 0.29]	.013
	Troubled CP use	0.15	[-0.01, 0.28]	.017
	Conscientiousness	0.02	[-0.02, 0.03]	.000
	Extraversion	0.03	[-0.08, 0.11]	.001
	Self-efficacy: Facebook applications	0.08	[-0.05, 0.10]	.002
	Self-efficacy: Facebook music applications	0.15	[-0.02, 0.11]	.008
	Identity score	-0.08	[-0.06, 0.03]	.003
ΔR^2	0.14			
ΔF	(10, 160) = 2.89**			

Note. DLT = digital listening technology, CP = consumer psychology; *CI* = confidence interval.

* $p < .05$, ** $p < .01$, *** $p < .001$

10.3.4 Predicting Facebook music application use.

36% of the total sample indicated that they used at least one Facebook music listening application. To address RQ2, logistic regression analysis was employed to predict the probability that a participant used a Facebook music application. Again, the predictor variables were selected by first performing bivariate correlations (Table 10.10), so that the logistic regression analysis employed the Facebook leisure use score, the music tasks and apps use Facebook task scores, engaged and troubled use digital listening technology scores, engaged and troubled consumer psychology scores, all five self-efficacy scores, and the identity factor score. The full model was statistically significant, X^2 (13, N = 174) = 105.70, $p < .001$; Cox & Snell $R^2 = .46$. Prediction success was 74.20% regarding those who used a Facebook music listening application and 87.50% for those who did not, with an overall success rate of 82.80%. Significant predictors ($\alpha = .05$) are shown in Table 10.10, and as the internal coding of the logistic regression set not using an application as = 1, this pattern of results must be interpreted in terms of the model predicting non-use.

The music tasks and apps use factors were associated with using a Facebook music application. This indicates that performing music and apps-related tasks is associated with listening to music via a Facebook application. With regard to consumer psychology constructs, the troubled use consumer psychology factor score was positively associated with non-use, suggesting that those who are utilizing such apps have a more confident approach to using SNS. Logically, high self-efficacy for specifically using Facebook music applications was predictive of use: however, high self-efficacy for general apps was indicative of non-use. In considering these findings together, utilizing Facebook listening applications appears to be related to confident app use for music-related tasks specifically.

Table 10.10.

Summary of Logistic Regression Analysis for Variables Predicting the Use of a Facebook Music Application

Predictor	B	S.E.	Wald	Exp(B)
Facebook leisure use score	-1.86	1.42	1.71	0.16
Music tasks score	-0.84**	0.29	8.70	0.43

Apps use score	-4.74***	1.25	14.34	0.01
Engaged DLT use	-0.11	1.06	0.01	0.90
Troubled DLT use	0.15	1.15	0.02	1.16
Engaged CP use	-2.39	1.94	1.52	0.09
Troubled CP use	3.11*	1.21	6.58	22.33
Self-efficacy: digital technology to listen to music	0.95	0.67	2.04	2.59
Self-efficacy: web-based cloud music technology	0.18	0.10	3.52	1.20
Self-efficacy: general Facebook account	-1.70	1.34	1.60	0.18
Self-efficacy: Facebook applications	1.73**	0.63	7.60	5.66
Self-efficacy: Facebook music applications	-3.33***	0.67	24.52	0.04
Identity score	0.07	0.27	0.06	1.07

Note. DLT = digital listening technology, CP = consumer psychology; *CI* = confidence interval; eB = exponentiated B.

* $p < .05$, ** $p < .01$, *** $p < .001$.

10.4 Conclusion

Fandom research in the digital era must shift to focus on explaining fan practices regarding a fan object and what those practices say about the fan (Gray et al., 2007). In recognizing that digital fandom exists in the participatory culture of SNS (and technology in general), this study (and that detailed in Chapter 9) demonstrates that online fan behaviors do have a psychological component.

In summary, the present study provided evidence that, as a consequence of spending leisure time on Facebook, individuals perform three different types of tasks. Beyond spending time on the website, self-efficacy and one's approach to technologies were important aspects of the individual in understanding fan practices. The findings reiterated the importance of one's approach towards technology (as discussed in Chapter 8), and also demonstrated the importance of self-efficacy with regard to fan practices on Facebook. While prior research has linked self-efficacy to technology adoption, the present study demonstrates that it is also related to continued use of SNS technology. Though, as 24-41% of the variance in performing different tasks on Facebook was explained by variables pertaining to

the individuals, future research may do well to consider additional variables, which may be better predictors. This includes not only focusing on the individual component of the reciprocal feedback model, but also a consideration of the music and situation (i.e., the other features of the reciprocal feedback model) to develop as stronger, unified understanding of SNS music practices.

In particular, the pattern of results does suggest several notable points for future research. While general Facebook use has been associated with personality traits (and particularly, extraversion) in past research (Nadkarni & Hofmann, 2012), the present findings indicate that there is scope for consideration of how personality relates to specific SNS feature use. For instance, future research could examine users' personalities across different features, since people with differing personalities may be drawn to one particular type of feature (or social network). Future research may also want to consider how more targeted audiences make use of certain social media features to perform certain fan behaviors. For instance, can particular patterns of usage be demonstrated for fans of specific genres or individual bands? Diary studies, for instance, could provide data on a range of in-depth specific behaviors and usage patterns.

Additionally, research should consider the uses and gratifications of performing specific online music practices, as these would likely provide detailed insight concerning motivations. The research presented in chapter 11 explores what the uses and gratifications associated with these music listening applications are.

Chapter 11: Facebook Music Listening Application Uses and Gratifications[10]

In 2011, the popular SNS Facebook allowed users to enable third-party applications (apps) to publish activity to Facebook (San Pascual, 2013). In doing so, Facebook and online music services "sought to redefine how people share and discover music" (San Pascual, 2013, p. 102). This change allowed users to listen to music and display their music listening history, share links to particular pieces of music, and even join in on friends' listening sessions. After only a year, 62.6 million songs had been involved in a striking 22 billion plays (Kirn, 2012) via these methods, such that it represents a significant, new means of listening to music, especially among those who are regular SNS users. For instance, as of September 2013, the AppData website (http://www.appdata.com/facebook_apps) reported over 28 million monthly active users of the Spotify Facebook application. Facebook music applications represent a resource for music discovery, recommendation, and everyday listening. While the number of active users demonstrates that SNS users are embracing this feature, the uses for and gratifications resulting from such behavior are unknown.

Uses and gratifications theory (U&G) is an approach to understanding how and why people seek out specific media. As a communication theory that assumes that audience members are not passive, it provides a useful paradigm to analyze media choices and consumption (Ruggiero, 2000). U&G theory is well established as a framework for explaining audience motives for using mass media (Cheung, Chiu, & Lee, 2011; Ruggiero, 2000). As digital media technologies have enhanced communication opportunities, U&G theory can be applied to web 2.0 media, and SNS in particular. Simultaneously a form of communication and media (Marshall, 2010),

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[10] *Note*. Material used in this chapter also appears in a manuscript submitted for publication. The revised version of which has been accepted for publication (see Appendix A for copyright permissions and Appendix B for co-author statements).

Krause, A. E., North, A. C., & Heritage, B. (in press). The uses and gratifications of using Facebook music listening applications. *Computers in Human Behavior.*

SNSs are intriguing subject matter for the study of the motivations, or gratifications underlying their use. The increasing popularity and expanding capabilities of SNS strongly suggest that people infer functionality and receive gratifications from their use. However, it is much less clear what exactly these uses and gratifications might be. Moreover, we have very little understanding of why people are motivated to use certain SNS features. U&G theory aptly addresses these questions.

Prior research has highlighted broad social reasons for using SNSs, such as a general sense of motivation to participate or of belonging and influence (Freyne, Jacovi, Guy, & Geyer, 2009), and more specific factors such as staying in touch with friends and family members, meeting with people with common hobbies or interests, and reading comments by public figures (Chen, 2011; Joinson, 2008; A. Smith, 2011). However, this prior research examining uses and gratifications at the site usage level does not detail how people use specific SNS features (including those related to music). In particular, researchers must recognize that SNSs support a range of social activities and that use is not uniform across users (Smock et al., 2011). Therefore, users' motivations and gratifications may differ (Joinson, 2008). Moreover, as SNSs add additional features, there is a need for greater consideration of the use of particular SNS features (Baek et al., 2011; Karnik, Oakley, Venkatanathan, Spiliotopoulos, & Nisi, 2013; Smock et al., 2011; Wohn, Lampe, Vitak, & Ellison, 2011). By applying U&G theory to specific feature use, research can account for the fact that people choose their level of participation, and choose to engage in some activities or site features and not others (Baek et al., 2011; Smock et al., 2011). In turn, developers interested in improving and enhancing the users' SNS experiences can use this detailed information when designing new features.

There are four studies that, in response, have examined the uses and gratifications for specific SNS features. The features considered include sharing links on Facebook (Baek et al., 2011), engaging in Facebook groups (N. Park, Kee, & Valenzuela, 2009), playing SNS games (J. Lee, Lee, & Choi, 2012), and participating in a music video sharing Facebook group (Karnik et al., 2013). In particular, the Karnik et al. (2013) study is of particular relevance to the present research, as it provides some data concerning a music activity.

Table 11.2 (and the discussion of the present study) details the uses and gratifications identified by these four studies in detail. While each study described

the selected feature's gratifications, there were commonalities—including entertainment and communication/ social interaction, which mirror motivations for more general usage of Facebook/ SNS also (e.g., Joinson, 2008; Urista, Dong, & Day, 2009). Additionally, although framed slightly differently depending on the feature, another gratification identified commonly by this earlier research was indicative of sharing information or promoting oneself or work. Other gratifications, however, were unique to the specific features in question. For instance, a competition motivation underlies playing SNS games, and a discovery motivation underlies participation in a Facebook group dedicated to sharing music videos. While these studies take a step in the right direction in beginning to examine specific feature use, research has not yet addressed music listening within the SNS context, which is particularly surprising given the apparent degree of linkage between SNS and music.

The current research objective was to determine the motivations for using music listening applications, as a particular Facebook feature, from the context of U&G theory. An application of U&G theory to this topic can address this research gap from a perspective that recognizes the need for specific feature-use investigations. Moreover, a better understanding of users' motivations benefits application developers. Therefore, the research question was as follows: What are the uses and gratifications associated with Facebook members' usage of music listening applications?

Given that using a music listening application can be conceptualized as an entertainment practice, it is possible that the reasoning behind music behaviors on SNS will mirror the gratifications identified previously for participating in a music video sharing group, posting links, and playing SNS games. In particular, as both entertainment and communication were relevant to the four different features, it seems reasonable to expect that both will relate also to using Facebook music listening applications. The "passing time" motivation for sharing links and playing SNS games likely also applies, as all three behaviors are a way to fill time on the site. Potentially the gratifications may even mirror those associated with broad SNS use as it involves communication as well. This might manifest as gratifications related to sharing information and interacting with other users through this specific site feature. It is possible that the entertainment reason may be a stronger reason for usage of apps, because a highly cited reason for listening to music is, in fact, for

entertainment or as a diversion (Lonsdale & North, 2011). However, because this involves music listening, a popular pastime in its own right, there could be unique reasons for using music listening apps within the Facebook platform. For example, Lonsdale and North (2011) showed that offline music listening has social psychological uses and gratifications (including, for example, projecting the individual's identity to others), and so similar factors might well also be identified in SNS music listening.

11.1 Method

11.1.1 Participants.

As a part of the larger investigation detailed in Chapter 10, 211 individuals residing in the U.S. and U.K. (64.50% U.S., 35.50% U.K.) provided data concerning the use of Facebook listening applications. (Data from an additional 40 individuals was excluded as they resided in other countries.) Participants' ages ranged from 16-68 years (M = 22.86, Mdn = 20, SD = 7.71), 71.60% of the sample was female, and 21.80% of the participants had university qualifications.

Seventy-six participants, or 36% of the total sample, indicated that they used at least one Facebook music listening application. Of the app users, 65.80% were female, 15.80% held university qualifications, ages ranged from 17 to 48 years (M = 21.83, Mdn = 19.50, SD = 6.38), and 60.50% resided in the U.S.

Participants were recruited online via the author's website, the university's student research participation program, and dedicated online research participation websites. Participation was voluntary; however, students enrolled in university's student research participation program received course credit for their participation.

11.1.2 Measure.

Participants responded to the direct question, "Do you use a music app on Facebook?" Participants who answered, "Yes," then stated the specific application and completed a uses and gratifications measure. This measure asked participants to rate their agreement with each of 29 reasons for using music apps on Facebook on a five-point Likert scale (anchored by *Not at all* and *Very much true*). The

individual items were adapted from prior technology-focused uses and gratifications research (Baek et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000), and included possibilities such as, "To share information that might be useful to others," "To promote my own music," and "Because it's entertaining." (All items are listed in Table 11.1 and adaptation references appear in Appendix W.)

11.1.3 Procedure.

The online advertising included a direct link to the questionnaire, hosted on the author's website. Participants first read information about the study, and indicated their consent prior to gaining access to the questionnaire content. Individuals were guided through the questionnaire via a series of webpages, with instructions provided for each section (taking around 15 minutes). Upon completion, participants were debriefed via a final webpage.

11.2 Results and Discussion

11.2.1 Music listening application use.

The 36% (*N*=76) of participants who indicated that they used at least one Facebook music listening application also had the opportunity to state specifically which application(s) they used. Six of these participants listed more than one application. Spotify and Pandora were cited most often (46 and 28 times, respectively), reflecting their particular current market dominance (http://www.appdata.com/facebook_apps); while LastFM was listed three times, and Reverbnation, Soundcloud, iLike, and YouTube each were cited once.

11.2.2 Music application Uses and Gratifications.

To answer the research question and so describe why individuals use music apps, a varimax rotation of the principal components concerning the 29 uses and gratifications items indicated seven components, which accounted for 73.38% of the total variance (shown in Table 11.1). The factors were labeled "entertainment," "normative," "promotion," "communication," "as diversion," "requirement," and "habitual," respectively.

Table 11.1.

Principal Components Analysis of Facebook Music App Uses and Gratifications

Item	Factor loadings [a]						
	1	2	3	4	5	6	7
Because it's enjoyable	0.87						
Because it's entertaining	0.85						
Because I just like to use it	0.74						
To see what is out there/ discover new music	0.63		0.40				
To relax	0.59				0.55		
Because it's fun to try out new things like this	0.58	0.31					
Because it's easy to use	0.49						0.63
To express myself freely	0.33		0.78				
Because I want someone to do something for me		0.80					
Because everyone else is doing it		0.76					0.32
To tell others what to do		0.73					
Because it's a popular thing to do		0.67		0.45			
To share information that might be useful to others		0.52	0.50	0.41			
To get feedback on information I have found		0.51		0.43	0.38	0.33	
To participate in discussions		0.38		0.46		0.47	
To provide information		0.36	0.64				0.31

To share information about my special interests		0.36	0.62	0.35			
To meet people with similar interests as me		0.32	0.35	0.59		0.32	
To promote the music/musicians I like			0.68				
To promote the musician/band I work for			0.55			0.46	
To promote my own music			0.49			0.69	
To share knowledge with others			0.37	0.71			
To communicate with friends and family				0.86			
Because it's an easy way to stay in touch with people				0.78			
Because I'm bored					0.82		
Because I have nothing better to do					0.75		0.31
Because it provides a distraction					0.59		
Because it's a habit					0.36		0.74
Because I had to use Facebook to create an account						0.79	
Eigenvalue	3.83	3.81	3.6	3.58	2.56	2.03	1.87
% of Variance	13.19	13.15	12.43	12.34	8.83	7.01	6.43

[a] Factor labels are entertainment, normative, promotion, communication, as diversion, requirement, and habitual, respectively.

Note. Loadings < .3 are suppressed.

Table 11.2

A Comparison of the Uses and Gratifications of Specific Facebook Features

Study	Present Study	Karnik, et al. (2013)	Park, et al. (2009)	Baek, et al. (2011)	Lee, et al. (2012)
Topic	Music listening application use on Facebook	Music video sharing Facebook group	participating in groups	Sharing links on Facebook	SNS games
Factors	Entertainment, normative, promotion, communication, as diversion, Requirement, and habitual	Contribution, discovery, social interaction, entertainment	Socializing, entertainment, self-status seeking, information	Information sharing, convenience and entertainment, to pass time, interpersonal utility, control, and promoting work	Social interaction, self-presentation, fantasy/role playing, passing time/escapism, entertainment, and challenge/competition
Factor 1	Entertainment (using music applications for enjoyment,	Discovery (of new music and re-discovering music they had	Entertainment (engagement in Facebook Groups for	Convenience and Entertainment (post links because it is	Entertainment (to have entertaining gaming experiences)

	entertainment, fun, and to discover new musicians)	not listened to in a long time)	leisure and amusement needs)	easy and entertaining)
		Entertainment (appreciated the music genre the group represented)		
Factor 2	Normative (because other people were, because it's popular, and in order to share information and discuss with others)	Contribution (participating in the group by contributing to and commenting on the content; valuing sharing their knowledge of music by posting videos and		Interpersonal utility (for interacting and socializing with others)?

		participating in conversations around music)			
Factor 3	Promotion (expressing oneself, promoting musicians and one's self, as well as providing information)	Contribution?	Information (intend to learn about on- and off-campus events and details regarding specific products and services) Self-status (seeking and maintaining their personal status; peer pressure)	Promoting Work (posting links to promote their works)	Self-presentation (to make a good impression on others)

Factor 4	Communication (staying in touch and communicating with others)	Social interaction (receiving appreciation)	Socializing (generally interested in meeting and talking with others as well as getting peer support and a sense of community)	Information sharing (posting links on Facebook to share information with other users) Interpersonal Utility?	Social interaction (to get others' support and maintain relationships)
Factor 5	As diversion (passing the time or use from boredom, as a distraction, and to relax)			Pass time (posting links to pass time)	Passing time/escapism (to pass time when bored and to escape from their real-life problems)
Factor 6	Requirement (having to use Facebook to create an				

	account and for promotion)		
Factor 7	Habitual (as habit, because its easy to use)	Convenience?	
Un-matched factor		Control (posting links as a means for controlling others)	Fantasy/role playing (to try out new identities and be absorbed in a fantasy world) Challenge/competition (to enjoy friendly competition with others and improve one's level in gaming)

A MANOVA examined whether there was a difference between the U.S. and U.K. samples on factor scores. The analysis was not significant F (7, 66) = 1.47, p = .195, η^2 = .135, indicating no difference on the basis of country of residence. To check the reliability of the factors, items with loadings of .50 or greater were entered into reliability analyses (one per factor). The resulting Cronbach's alpha values for each factor were .86, .90, .88, .86, .74, .58, and .78 respectively. While the reliability for the requirement grouping was lower than the other factors, it was retained because it represents a unique gratification, in that it directly binds Facebook to using a listening application.

As Table 11.2 illustrates, there are strong similarities between the uses and gratifications found for using a music listening application and other SNS features considered by recent research. As anticipated, the entertainment and communication/ social interaction components (common to all four specific features, as well as Facebook and SNS use generally) were also evident in the context of music application use. That these motivations apply to different site features is logical since these are the basis of such platforms: SNS function simultaneously as a form of communication and media (Marshall, 2010). However, it is interesting that, despite usage of the apps in a social media context, the communication factor did not explain the greatest portion of the variance in participants' practices. Rather, entertainment explained the greatest portion of the variance, confirming the suspicion that music app usage on SNS has a strong entertainment focus. This perhaps implies that social media are to a considerable extent merely the host for a gratification that could be obtained via other (non social) media. Perhaps this is because current SNS music apps are optimized for desktop computers, whereas much of people's everyday music listening otherwise occurs on portable devices, which allow music to facilitate the achievement of other in situ goals in a manner that cannot be achieved as easily on a desktop device.

Moreover, the promotion motive mirrors Park et al.'s (2009) self-status motive for participating in groups, Baek et al.'s (2011) promoting work reason for posting links, and Lee et al.'s (2012) self-presentation reason for playing SNS games. Moreover, passing time, as hypothesized, applied to listening to music via a Facebook app, just as it did to sharing links and playing SNS games. The normative motive could be considered similar to Karnik et al.'s (2013) contribution motive and

Baek et al.'s (2011) interpersonal utility, since all three are characterized in part by wanting to contribute to a discussion and interaction with other people.

Two gratifications, requirement and habitual, however, did not map onto previous research (these two factors also explained the smallest portions of the variance). Perhaps the habitual reason relates to the idea of convenience, as it pertained to sharing links (Baek et al., 2011). It could also be that the Facebook integration has simply made it easy for users to integrate listening into their SNS use, creating a habit of doing so when on the site. The requirement reason offers an interesting distinction from former research in that it accounts for use out of necessity: a user logs into an app using Facebook and, as a musician, can take advantage of a large, potential audience when promoting him/herself on the site.

11.3 Conclusion

As researchers have begun to conduct more specific and detailed investigations of how individuals use different aspects of social media (e.g., Baek et al., 2011; Karnik et al., 2013; Smock et al., 2011), the major contribution of this study is in defining the motivations behind music listening Facebook applications. The seven uses and gratifications underlying using Facebook listening applications (entertainment, normative, promotion, communication, as diversion, requirement, and habitual) indicate that while some individuals derive pleasure from listening or do so as a leisure interest, there are also more commercial and personal motivations, such as using the tool to promote not only a musician or group, but also to express one's own identity. Joinson (2008) remarked that content gratifications (like using apps) contributed to the "stickiness" of SNS, or the notion that SNS use is self-reinforcing. The current research supports this idea: app users are experiencing positive gratifications that are likely supporting and deepening SNS use.

Moreover, the apparent importance of "entertainment" also suggests one manner in which the present results differ from previous findings. Other recent work, like diary studies of music usage in everyday life (e.g., Chapters 2 and 4 using the Experience Sampling Method and Day Reconstruction Method), has indicated that people often take advantage of digital technology so that their primary reason for listening to music is to serve a variety of very specific, practical purposes that

reflect the listening situation (such as listening to calming music on the evening commute home). In contrast, the present finding concerning the importance of entertainment indicates that social media music app usage, which typically occurs on a fixed desktop computer, is less utilitarian. As such, it will be important to consider how music-related social media behaviors fit into a theoretical perspective that explains everyday music interactions.

Moreover, this study has practical implications for those involved commercially in both music and social media. A detailed understanding concerning the reasons why individuals use listening applications benefits application designers who are working to increase the number of users and improve user experience. Understanding the perceived gratifications associated with listening via these online applications is similarly useful for the music industry, which in recent years has attempted to reduce illegal copying and distribution of music by developing online business models. Data such as that presented here are necessary in order to develop current business practices.

This research is not without limitations, however. While the uses and gratifications items used in the present study were developed from prior research concerning online technology in particular, it may be beneficial to also consider those uses and gratifications associated with listening to music specifically. Similarly, as some of the items cross-loaded onto more than one factor ("To meet people with similar interests as me," for example), it may be useful to further examine these items when considering future scale development. Moreover, future research should consider music-related SNS practices with a larger and more diverse sample. The present study's sample included people from both the U.K. and U.S., but future research would obviously benefit from drawing on a wider audience. Another interesting approach could also involve comparing the gratifications experienced by listener-users to those experienced by musician-users. Moreover, music SNS practices are not limited to online listening applications. For instance, links and videos are shared and discussed, and many musicians maintain pages to interact with and disseminate information to their fans. Music behaviors on Facebook (and other SNS platforms) include behaviors beyond listening applications, and additional research is required to understand how individuals make use of SNS as fans.

Moreover, from the perspective of fandom research, simply identifying the uses and gratifications of a behavior is limited; however, it complements the research presented in Chapters 9 and 10, and social media users, musicians, and application designers can all benefit from findings such as these. With fandom research shifting to research what fan practices can tell us about fans situated in modern, technological, daily life, future research might consider whether SNS music-usage meets certain specific psychological needs such as validation of the self or providing a basis for social interaction. The present data suggest that it might.

As online applications, like those within the Facebook platform considered presently or other websites and mobile applications, continue to emerge and develop they become more and more ingrained into people's daily lives. It will be important to continue to research online behaviors to better understand how these access strategies help create people's everyday experiences with music.

Chapter 12: Conclusions

This final chapter draws together the findings from each previous chapter, highlighting how the studies included contribute towards the aims outlined in the first chapter. This is followed by a consideration of the implications of the work for the psychology of music, recommendations for future research, some critical reflection, and then final concluding remarks.

12.1 Summary

The aim of the nine studies, as described in Chapters 2-11, was to examine three components of everyday listening, namely (a) how individuals access and select music to listen to; (b) the notion of choice/control over the music heard; and (c) the response to the music heard (e.g., mood responses and the perceived effects of the music). Emphasizing the technologies involved in everyday listening sets this body of work apart from previous research on music behaviors. Moreover, the consideration of Mehrabian and Russell's model as a framework for explaining musical behavior has resulted in research that contributes to our understanding of how individuals use music in everyday life.

In particular, Section One examined everyday listening with particular reference to the importance of the context in which it occurs. Chapter 2 detailed the position that music holds in the daily Western-world experience: the obtained results provide an updated overview of where, when, and how listening takes place in daily life. Importantly, findings implicated differences in how people responded to the music based on differences in terms of choice and control relative to the devices and selection behaviors involved in the music experiences. Moreover, individuals' mood and the perceived consequences of hearing the music also were partially dependent on the device, selection method, and location of the experience.

Additional research conducted to investigate the notion of control was presented in Chapters 3-6. The results provided strong evidence concerning the role of contextual features in everyday music listening episodes. Significant results pertained to pleasure, arousal, and dominance. Findings concerning arousal supported the notion that people use arousal-polarizing listening strategies. While separate domains, some of the findings implied that dominance was important to

judgments of the arousal dimension as well. In fact, perhaps arousal-polarization can be considered as the exertion of a desired dominance state. This issue is one for future research. Collectively, it seems that the findings concerning dominance are most interesting. People's evaluation of environmental dominance was consistently a significant predictor in analyses, including explanations of how much music was liked, how arousing it was, how much attention was paid to it, and how much control they felt they had over hearing the music. Felt evaluations of pleasure, arousal, and dominance differ by context, and it is clear that these changes influence how people experience music, as evident from both the study regarding preferences for playlists made for different situations and the experiment in which the element of control and location was manipulated.

Section Two considered the potential role of psychological variables in how music is accessed, both in terms of listening devices and selection behaviors. Results indicated that it is insufficient to merely map the demographic characteristics of the individuals concerned or know how much time people spend with different music listening devices in order to understand how people interact with music in everyday life. Rather, the consideration of psychological factors was able to add significantly to our understanding of many aspects of how participants accessed their music. In particular, innovativeness and opinion leadership (constructs commonly considered in consumer psychology research) and technological self-efficacy were related to listening habits and technology use. Although only an initial exploration of the utility of applying psychological constructs to everyday music listening behaviors, the results provide a foundation from which future research can expand by drawing on the large number of findings concerning these concepts within consumer psychology.

Finally, Section Three considered another facet of everyday listening psychology, namely music behaviors on social media. The results indicate that online fan behaviors have a psychological component. In particular, how one approaches using SNS (encompassing the consumer psychology constructs) is important to distinguishing the SNS users who value musician involvement via SNS as well as those who personally utilize SNS to interact with musicians. Beyond simply spending time on Facebook, self-efficacy and one's approach to technology is important to whether individuals perform music tasks online. One practice in

particular is the use of music listening applications within the Facebook platform, for which the present research established seven uses and gratifications. As current fandom research is shifting towards greater focus on explaining what fan practices tell us about the other characteristics and traits of the individual concerned (Gray et al., 2007), it will be important to continue to examine online music behaviors from a psychological perspective.

12.2 Implications for the Field

Music is not experienced in a vacuum (Konečni, 1982); and as North and Hargreaves (2008) stressed, research within the field of the social and applied psychology of music should focus on questions that concern people's relationship to music as most experience it. Consequently, as expressed in Chapter 1, this work was based on two fundamental contentions, namely that the everyday contexts in which music is experienced are diverse and that current technologies are firmly embedded in our daily experiences.

In sum, the findings presented throughout this thesis indicate that musical behaviors are embedded in the daily stream of life, and that listening technologies have increased listeners' ability to choose and control the music that they hear. Moreover, because technology has affected the way people listen to music, it needs to be accounted for in the theoretical explanations of these behaviors. While it was not expected that a single variable would predict everyday music behaviors (which are obviously complex), the research presented here suggests that the consideration of psychological variables is important to understanding everyday music listening. Furthermore, this work has begun to establish the utility of applying Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance model to everyday listening. Notably, the dominance domain is important to consider in today's technologically-mediated culture. Though additional work is needed to confirm and refine the application of this model to everyday listening, this model from environmental psychology offers the field a potential theory (which is something that has been lacking from much of the previous work).

12.2.1 Future directions.

Firstly, it will be useful for future research to use Mehrabian and Russell's PAD domains when examining everyday music behaviors and experiences. In particular, it may be of interest to carry out qualitative research that probes individuals' perception of what constitutes dominance in order to refine how it is operationalized.

Secondly, one of the limitations of the present work is the absence of any longitudinal research. It will be worthwhile to conduct longitudinal research on everyday listening habits. With the recent, and growing, interest in mobile and wearable technologies, it may be possible to use these to collect data about music listening. (Indeed there has been a noticeable growth in such that has occurred during the completion of the work reported here.) In particular, these may be especially useful when studying listening over extended periods of time, by for example using a smartphone app that allows collection of in situ ratings of the various possible contributors to dominance and in the light of play counts for particular pieces of music, for instance.

Moreover, cloud listening websites have gained traction in the music industry. In fact, the number of Spotify subscribers has grown globally: as of May 2014, it has over 40 million active users, of which 10 million are paid subscribers of the service (Sisario, 2014). Spotify is only one of the many ways that people interact with music daily. These kinds of online music collections, alongside YouTube and other services that allow users to post and share music, playlists, and videos may offer a wealth of data to explore in terms of contextualized listening habits.

Additionally, future research designs should carefully consider sampling techniques. The use of convenience sampling, as well as the use of the internet for data collection, in the present research may have an impact on the generalizability of the findings. Similarly, as previously mentioned, a cross-cultural examination would provide a more-rounded view of how people experience music in everyday life.

Thirdly, by establishing the importance of context in everyday listening, this work has clear implications for the music information retrieval community, and those developing music listening programs and applications. Merely knowing the broad demographics and genre preferences of listeners is not enough to tailor a

user's experience. For instance, those working on developing algorithms for applications and recommendation systems that aim to create playlists of music for listeners, need to account for where, how, and why listeners are selecting music to accompany them. Accounting for these kinds of variables would dramatically improve and extend the current listening recommendation systems if they can be managed alongside listeners' idiosyncrasies and implemented to complement the popular listening technologies of today.

12.3 Concluding Remarks

Previous research has focused on explaining music behaviors in terms of the music itself, but has typically ignored the possibility that people's interactions with music are context dependent. In particular, the findings of the present collection of work demonstrate that everyday experiences are shaped in part by the environment and technologies involved. Thus, it is important that the theories used to explain musical behavior include aspects of the environment and technology in question in addition to the actual music involved. Of course, as Brown and Sellen (2006) asserted, listening technologies are not at the end of their development: the current technology will be superseded many times over. Thus, it is not any one particular device or format that is important, but how people integrate the technology into their lives and how it changes their level of control over music. The present findings, which indicate that the popularity of music is associated with the degree of choice and control that one exerts over it, allow this thesis to conclude with confidence that the valued place of music in society seems secure for years to come.

"Where words fail, music speaks" - Hans Christian Anderson

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Appendix B

Written statements from co-authors regarding their contributions to publications resulting from the research presented in this thesis are included below.

Chapter 2

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "Music-listening in everyday life: Devices and choice" (published in *Psychology of Music*, advance online publication; doi:10.1177/0305735613496860); "Music selection behaviors in everyday listening" (published in *Journal of Broadcasting and Electronic Media, 58*, 2, 306-323; doi:10.1080/08838151.2014.906437); and "The role of location in everyday experiences of music" (manuscript submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Lauren Y. Hewitt _____

Chapter 3

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "In situ music playlists" (manuscript submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Chapter 4

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "Pleasure, arousal, dominance, and in situ responses to music" (manuscript submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Chapter 5

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "How does location and control over the music influence listeners' responses?" (manuscript to be submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Chapter 6

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "'Tis the Season: Spring versus autumn playlist preferences" (manuscript submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Chapter 7 & 8

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "Music listening in everyday life: Devices, selection methods, and digital technology" (manuscript submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Chapter 9 & 10

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "Psychological correlates of music fan practices on social networking sites" (manuscript submitted for review).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Brody Heritage _____

Chapter 11

To Whom It May Concern

I, Amanda Elizabeth Krause, contributed to the conception and design of the project, the collection and analysis of data, the interpretation of the results, and drafted and revised significant parts of the work to the publication entitled "The uses and gratifications of using Facebook music listening applications" (manuscript accepted for publication in *Computers in Human Behavior*).

_____

I, as a Co-Author, endorse that this level of contribution by the candidate indicated above is appropriate. As co-author, I contributed advice on the research design, statistical analyses, and the interpretation of the data; nonetheless the senior role was Amanda's.

Adrian C. North _____

Brody Heritage _____

Appendix C

Participant Information and Consent Form

01 November 2010

Title of Research: Daily Listening Experiences

Name of Researchers:
Amanda Krause, Researcher, aek5@hw.ac.uk
Adrian North, Research Supervisor, a.north@hw.ac.uk

Purpose of the Research:
Under the supervision of Adrian North, Professor at Heriot Watt University, Amanda Krause, a post-graduate student in Applied Psychology, is conducting research on everyday musical experiences. The purpose of this study is to examine how individuals interact with music on a daily basis.

What You Will Be Asked to Do:
To start, you will be asked to complete a questionnaire, which should take approximately 5 minutes. This questionnaire includes questions about your age, gender, and level of music education, experience, and engagement. Then, beginning on X November 2010 you will receive 2 text messages per day for 7 days. After receiving each of these text messages sent to your mobile telephone, you will complete a response entry about whether you heard music within a 3-hour period prior to the text message. If you did hear music, you will answer a series of questions about what you heard. You will repeat the entry procedure electronically after receiving each message, so you will complete 2 entries each day – 14 in total.

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in the research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Heriot Watt University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (aek5@hw.ac.uk) or Adrian North (a.north@hw.ac.uk).

Thank you for your participation in this research study.
By signing this form, I am attesting that I have read and understand the nature of this project and consent to participate in this study.

Participant Signature: _____ Date: _____

Appendix D

Background Form

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____ Country of Residence: _____

How important do you consider music to be in your life? (Please mark with an 'X')

Not at all ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 extremely

On average, how many hours do you listen to music daily? _____ hours

Musical education and experience:

What do you like to listen to?

Response Entry

Time that the text message was received: _____

Time when completing this entry: _____

□ Tick here if you did not hear music within a 2-hour period prior to receiving the text message. Remember, you do not need to complete the rest of the questions if you did not hear any music within those 2 hours.

If you heard music multiple times within the 2 hour block prior to receiving the text message, please fill out this entry about the most recent listening episode.

Directions: Please select what best applies and mark only one answer with an 'X.'

Where were you?
____ At home
____ At a friend's house
____ At work
____ Driving a car
____ In a car
____ Public transportation
____ Walking
____ Restaurant
____ Shopping
____ Religious worship

How did you hear the music?
____ Mobile mp3 player
____ Mobile telephone
____ Mobile gaming device
____ Mobile CD player
____ Mobile cassette player
____ Computer – own collection (iTunes, Winamp, etc.)
____ Computer – online streaming (Spotify, LastFM, etc.)
____ Stereo – mp3 device

____ Pub / Club
____ Concert
____ At the gym
____ In class/ lecture
____ Other: (please state below)
_____

____ Stereo – CD
____ Stereo – cassette
____ Stereo – record
____ Radio
____ TV
____ Tablet
____ In public – live artist/group/ensemble
____ In public – recorded music

How much choice did you have in what you heard?

None	__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7	Total

How much attention were you paying to the music?

None	__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7	Total

How much did you like what you heard?

Dislike very much	__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7	Like very much

How arousing was the music you heard?
(Arousing in this case means how loud/fast/energizing/etc. was the music?)

Not at all	__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7	Very arousing

How did you feel BEFORE hearing the music and AFTER hearing the music?
(1=not at all, 7=very much)

Bored/ Unstimulated	__ 1	__ 2	__3	__ 4	__ 5	__ 6	__ 7		__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7
Excited/ Festive	__ 1	__ 2	__3	__ 4	__ 5	__ 6	__ 7		__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7
Peaceful/ Relaxed	__ 1	__ 2	__3	__ 4	__ 5	__ 6	__ 7		__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7
Unsettled/ Disconcerted	__ 1	__ 2	__3	__ 4	__ 5	__ 6	__ 7		__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7
How pleasant was your mood?	__ 1	__ 2	__3	__ 4	__ 5	__ 6	__ 7		__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7
How sleepy were you?	__ 1	__ 2	__3	__ 4	__ 5	__ 6	__ 7		__ 1	__ 2	__ 3	__ 4	__ 5	__ 6	__ 7

The effect of this music was…
Please mark your answer with an 'X' on the scales below. If you feel that the music did not have the listed effect, mark the middle, otherwise mark your answer closer to one of the two end points on each of the scales.

It hindered my concentration/ thinking	-3	-2	-1	0	1	2	3	It helped me to concentrate/think
It did not help to pass the time	-3	-2	-1	0	1	2	3	It helped to pass the time
It prevented or lessened an emotion	-3	-2	-1	0	1	2	3	It helped create or accentuate an emotion
It did not help the atmosphere	-3	-2	-1	0	1	2	3	It helped to create the 'right' atmosphere
It did not motivate me	-3	-2	-1	0	1	2	3	It motivated me
It hindered what I was trying to do	-3	-2	-1	0	1	2	3	It helped me with what I was trying to do
It did not bring back memories	-3	-2	-1	0	1	2	3	It brought back memories
It made me look bad	-3	-2	-1	0	1	2	3	It helped me look good
I learned nothing about the music	-3	-2	-1	0	1	2	3	I learned more about the music
It annoyed me	-3	-2	-1	0	1	2	3	I enjoyed it
I wanted to get away from the music	-3	-2	-1	0	1	2	3	I wanted to hear the music for longer
It hindered my worship	-3	-2	-1	0	1	2	3	It helped me worship
Other (please specify)	-3	-2	-1	0	1	2	3	Other (please specify)

How did you select what you heard?

____ I did not have any control
____ Someone I was with chose
____ Specific artist
____ Specific album
____ Specific song
____ Random/shuffle
____ It was performed live at the time
____ Premade playlist – your own
____ Premade playlist –by someone else
____ Created a playlist at the time
____ Listened to the radio
____ Watched TV
____ Downloaded from the Internet
____ Other: _____

Appendix E

Participant Information and Consent Form

01 November 2010

Title of Research: Creating Playlists

Name of Researchers:
Amanda Krause, Researcher, aek5@hw.ac.uk
Adrian North, Research Supervisor, a.north@hw.ac.uk

Purpose of the Research:
Under the supervision of Adrian North, Professor at Heriot Watt University, Amanda Krause, a post-graduate student in Applied Psychology, is conducting research on how individuals interact with music on a daily basis. The purpose of this study is to examine how individuals use their music collections to create playlists for everyday use.

What You Will Be Asked to Do:
First, you will be asked to complete a questionnaire, which should take no more than 5 minutes. This questionnaire includes questions about your age, gender, and level of music education, experience, and engagement. Second, you will use your own music collection to create a playlist (10-12 songs) and answer a few questions about your playlist. After completing the playlist and submitting your list and responses to the questions, your participation in this study is complete.

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in the research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Heriot Watt University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (aek5@hw.ac.uk) or Adrian North (a.north@hw.ac.uk).

Thank you for your participation in this research study.

By signing this form, I am attesting that I have read and understand the nature of this project and consent to participate in this study.

Participant Signature: _____ Date: _____

Appendix F

The aim of this study is to investigate the music that individuals use to create playlists. There are no right or wrong answers—we're looking for your honest responses. Remember that your participation is completely voluntary and that you have the right to withdraw at any time.

Thank you for your participation!

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Musical education and experience:

What do you like to listen to?

How important do you consider music to be in your life? (Please mark with an 'X')

Not at all ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 extremely

On average, how many hours do you listen to music daily? _____ hours

Nationality: _____ Country of Residence: _____

→* Note that the rest of the questionnaire was completed for one of eight given situations.

a. were a house party with friends
b. jogging with an mp3 player
c. before going to sleep
d. after a long day of work
e. a wedding
f. a wedding
h. doing the washing up/ ironing
i. commuting on public transportation

Directions: Please use your personal music library/collection to create a playlist for <<**ENTER SITUATION HERE**>>.
Please write your selections in the table below, including the song title and artist/group.

	SITUATION: <<**ENTER SITUATION HERE**>>	
	Song Title	Artist/ Group
1		
2		
3		

4		
5		
6		
7		
8		
9		
10		
11		
12		

Please circle how much each item below would match your playlist selections.
(1=not at all, 7=extremely)

Familiar	1	2	3	4	5	6	7
Sad	1	2	3	4	5	6	7
Attention-Grabbing	1	2	3	4	5	6	7
Invigorating	1	2	3	4	5	6	7
Happy	1	2	3	4	5	6	7
Beautiful	1	2	3	4	5	6	7
Loud	1	2	3	4	5	6	7
Inspiring/ majestic	1	2	3	4	5	6	7
Natural/ fresh	1	2	3	4	5	6	7
Sentimental	1	2	3	4	5	6	7
Sophisticated/ classy	1	2	3	4	5	6	7
Exotic	1	2	3	4	5	6	7
Quiet	1	2	3	4	5	6	7
Nostalgic	1	2	3	4	5	6	7
Romantic	1	2	3	4	5	6	7
Relaxing/ peaceful	1	2	3	4	5	6	7
Moody	1	2	3	4	5	6	7
Strong ethnic roots	1	2	3	4	5	6	7
Can dance vigorously to it	1	2	3	4	5	6	7
Sensual	1	2	3	4	5	6	7
Lilting	1	2	3	4	5	6	7
Expresses profound emotions	1	2	3	4	5	6	7
Exciting/ festive	1	2	3	4	5	6	7
Strong rhythm	1	2	3	4	5	6	7

How similar do you think your list would be to others' for this situation?

Unique/ original	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	The same

To what degree do you think the situation defines the above song choices?

Not at all	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Completely

Directions: Please think about the situation for which you just created a playlist, namely **<<ENTER SITUATION HERE>>**.

Please complete the following questions based on how you feel in this particular situation. Some of the pairs below might seem unusual, so you'll probably feel more one way than the other. So, for each pair, mark your answer close to the adjective which you believe to describe your feelings better. The more appropriate that adjective seems, the closer you put your choice.

Pleasure: In this situation, I feel…								
Happy	____	____	____	____	____	____	____	Unhappy
Pleased	____	____	____	____	____	____	____	Annoyed
Satisfied	____	____	____	____	____	____	____	Unsatisfied
Contented	____	____	____	____	____	____	____	Melancholic
Hopeful	____	____	____	____	____	____	____	Despairing
Relaxed	____	____	____	____	____	____	____	Bored
Arousal: In this situation, I feel…								
Stimulated	____	____	____	____	____	____	____	Relaxed
Excited	____	____	____	____	____	____	____	Calm
Frenzied	____	____	____	____	____	____	____	Sluggish
Jittery	____	____	____	____	____	____	____	Dull
Wide-awake	____	____	____	____	____	____	____	Sleepy
Aroused	____	____	____	____	____	____	____	Unaroused
Dominance: In this situation, I feel..								
Controlling	____	____	____	____	____	____	____	Controlled
Influential	____	____	____	____	____	____	____	Influenced
In control	____	____	____	____	____	____	____	Cared-for
Important	____	____	____	____	____	____	____	Awed
Dominant	____	____	____	____	____	____	____	Submissive
Autonomous	____	____	____	____	____	____	____	Guided

How often do you make playlists?

never	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	a lot

How often do you listen to music via playlists (rather than a specific album or artist)?

never	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	a lot

How often do you listen to music on shuffle/ random (rather than a playlist or specific album/artist)?

never	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	a lot

Appendix G

1) a. Directions: Imagine you are creating a playlist titled, 'Autumn'. Please circle how much each item below would match your playlist selections. (1=not at all, 7=extremely)

Familiar	1	2	3	4	5	6	7
Sad	1	2	3	4	5	6	7
Attention-Grabbing	1	2	3	4	5	6	7
Invigorating	1	2	3	4	5	6	7
Happy	1	2	3	4	5	6	7
Beautiful	1	2	3	4	5	6	7
Loud	1	2	3	4	5	6	7
Inspiring/ majestic	1	2	3	4	5	6	7
Natural/ fresh	1	2	3	4	5	6	7
Sentimental	1	2	3	4	5	6	7
Sophisticated/ classy	1	2	3	4	5	6	7
Exotic	1	2	3	4	5	6	7
Quiet	1	2	3	4	5	6	7
Nostalgic	1	2	3	4	5	6	7
Romantic	1	2	3	4	5	6	7
Relaxing/ peaceful	1	2	3	4	5	6	7
Moody	1	2	3	4	5	6	7
Strong ethnic roots	1	2	3	4	5	6	7
Can dance vigorously to it	1	2	3	4	5	6	7
Sensual	1	2	3	4	5	6	7
Lilting	1	2	3	4	5	6	7
Expresses profound emotions	1	2	3	4	5	6	7
Exciting/ festive	1	2	3	4	5	6	7
Strong rhythm	1	2	3	4	5	6	7

b. Please give your first choice song (and artist) for this playlist:

_____

---

2) a. Directions: Imagine you are creating a playlist titled, 'Spring'. Please circle how much each item below would match your playlist selections. (1=not at all, 7=extremely)

Familiar	1	2	3	4	5	6	7
Sad	1	2	3	4	5	6	7
Attention-Grabbing	1	2	3	4	5	6	7
Invigorating	1	2	3	4	5	6	7
Happy	1	2	3	4	5	6	7
Beautiful	1	2	3	4	5	6	7
Loud	1	2	3	4	5	6	7
Inspiring/ majestic	1	2	3	4	5	6	7
Natural/ fresh	1	2	3	4	5	6	7

Sentimental	1	2	3	4	5	6	7
Sophisticated/ classy	1	2	3	4	5	6	7
Exotic	1	2	3	4	5	6	7
Quiet	1	2	3	4	5	6	7
Nostalgic	1	2	3	4	5	6	7
Romantic	1	2	3	4	5	6	7
Relaxing/ peaceful	1	2	3	4	5	6	7
Moody	1	2	3	4	5	6	7
Strong ethnic roots	1	2	3	4	5	6	7
Can dance vigorously to it	1	2	3	4	5	6	7
Sensual	1	2	3	4	5	6	7
Lilting	1	2	3	4	5	6	7
Expresses profound emotions	1	2	3	4	5	6	7
Exciting/ festive	1	2	3	4	5	6	7
Strong rhythm	1	2	3	4	5	6	7

b. Please give your first choice song (and artist) for this playlist:
_____

Appendix H

Information Sheet

25 April 2013

Title of Research: Day Reconstruction Study

Name of Researchers:
Amanda Krause, Researcher, a.krause@postgrad.curtin.edu.au
Adrian North, Research Supervisor, adrian.north@curtin.edu.au
Lauren Hewitt, Research Supervisor, lauren.hewitt@curtin.edu.au

Purpose of the Research:
Amanda Krause, a post-graduate student at Curtin University, is conducting research on everyday musical experiences. The purpose of this study is to examine how individuals interact with music in different situations on a daily basis.

What You Will Be Asked to Do:
To start, you will be asked to complete a background questionnaire, which includes questions about your age, gender, and level of music education, experience, and engagement. Then, you will be asked to reconstruct the previous day by listing what you did as a series of episodes. For each episode, you will then be asked a short series of questions. Upon completing this study, you are eligible to enter your name into a draw for 1 of 2 $50 iTunes vouchers.*

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in this research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Curtin University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use for a period of five years.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (a.krause@postgrad.curtin.edu.au) or Adrian North (adrian.north@curtin.edu.au).

Thank you for your participation in this research study.

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number Psych and SP 2013 - 06). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au. Any complaints or concerns about the conduct of this research can also be directed here.

*To be in the draw for the iTunes voucher you must complete the survey by 24 April 2014. The Terms and Conditions of this competition are as follows.
Day Reconstruction Study - iTunes voucher: Terms and Conditions

1. Instructions on how to enter and other details contained within promotional advertisements for this competition form part of the conditions of entry.
2. By entering the competition, entrants agree to abide by these Terms and Conditions.
3. The Terms and Conditions of this competition are governed by the laws of the State of Western Australia.
4. The competition is being run by Curtin University of Technology, GPO Box U1987, Perth, Western Australia, 6845 ("Curtin").
5. The iTunes voucher Competition ("the competition") commences at 8:00 am AWST on Wednesday, 01 May 2013.
6. The closing time for entering the competition is 8:00 am AWST on Thursday, 24 April 2014.
7. Entry to the competition is limited to participants who complete the Day Reconstruction Study questionnaire ("Survey").
8. To enter the competition, the entrant must complete the Survey online and submit the survey before the closing time and date.
9. Entry to the competition is free. Entrants will be responsible for all costs associated with entering the competition, which may include costs associated with accessing the Internet.
10. Entrants may only enter the competition once.
11. There will be two (2) prizes. The prize will be an iTunes voucher worth $50 AUD.
12. There will be one (1) draw at 10:00 a.m. Australian Western Standard Time on Friday, 25 April 2013 at building 603, 6 Sarich Way Technology Park Bentley.
13. The draw will be by Random number generator from all eligible entries, with the first entry drawn being the prize winner.
14. The prize winner will be contacted within seven (7) days of the draw by the email address supplied by the entrant on the Survey form.
15. If the prize winner does not respond to claim the prize within twenty-one (21) days of the draw, a re-draw will be conducted within thirty (30) days of the original draw date, in the same location, and with the same method.
16. The prize winner will be responsible for all costs associated with collecting and using the prize.
17. By entering the competition the entrant agrees that they are over the age of 18 years, of if under the age of 18 years, have their parent's or legal guardian's consent to enter the competition.
18. The prize is not redeemable for cash or an alternative prize.
19. The prize is not transferrable.
20. The prize winner's name may be published on the Curtin website and/or newsletters. By entering the competition, entrants grant Curtin permission to use their full name and work location on its website for up to six months from the date

of the draw.

21. Curtin is not responsible in any manner whatsoever for any problems or any financial costs incurred, or any combination thereof, including any injury or damage to participants or any other persons related to or resulting from participation in this competition.
22. Curtin accepts no responsibility and shall not be held legally liable or responsible for any accident, loss, injury or damage to any individual or property whether direct or indirect, whether in contract, tort, negligence or otherwise arising out of or in connection with the competition or the prize, either during or after the competition.
23. Entry into the competition signifies acceptance of all conditions. Entrants are required to abide by the Terms and Conditions as presented.
24. Curtin's decision will be final and no correspondence will be entered into.
25. Personal information provided by an entrant to Curtin for the purpose of entering the Competition will be collected, used and disclosed in accordance with Curtin's Privacy Statement. A copy of the privacy statement is available at http://global.curtin.edu.au/legal/privacy.cfm. Personal information collected will be kept strictly confidential and will not be sold, reused, rented, loaned or otherwise disclosed to any third party otherwise than in accordance with the Curtin privacy statement and these Terms and Conditions.

Consent Form

Title of Research: Day Reconstruction Study

Name of Researchers:

Amanda Krause, Researcher, a.krause@postgrad.curtin.edu.au
Adrian North, Research Supervisor, adrian.north@curtin.edu.au
Lauren Hewitt, Research Supervisor, lauren.hewitt@curtin.edu.au

Purpose of the Research:
Amanda Krause, a post-graduate student at Curtin University, is conducting research on everyday musical experiences. The purpose of this study is to examine how individuals interact with music on a daily basis.

By signing this form (*implied by clicking their agreement online),

- I acknowledge that I have been informed of and understand the purposes of the study.
- I have been given the opportunity to ask questions about the study.
- I understand that after I sign and return this consent form it will be retained by the researcher as a record of my consent.
- I understand that my participation in this research is voluntary, and that I can withdraw from this study at any time without negative consequences.
- I understand that this study may be published; however, no information will be used to identify me.
- I agree to participate in the study as outlined to me.

Participant Name: _____

Participant Signature: _____ Date: _____

Debriefing Information

Thank you for your participation in this research study. Your participation is greatly appreciated.

The purpose of this study was to explore how individuals interact with music on a daily basis. In particular, we'd like to have a better understanding of how individuals feel in control of the music they listen to in their daily life, and whether this is at least partially dependent on the context and/or device involved in the listening situation.

Further Questions?
If you have any further questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (a.krause@postgrad.curtin.edu.au) or Adrian North (adrian.north@curtin.edu.au).

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number Psych and SP 2013 - 06). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au. Any complaints or concerns about the conduct of this research can also be directed here.

Appendix I

Note. This questionnaire was completed online using the Qualtrics survey software. The content is reproduced below.

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____ Country of Residence: _____

Do you have a university level qualification (e.g., Bachelor's degree)? _ Yes _ No

How important do you consider the following to be in your life?
(Please mark with an 'X', 1=not at all, 7=extremely)

Music	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
Technology	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

On average, how many hours do you listen to music daily? _____ hours

On average, how many hours do you interact with technology daily? _____ hours

Musical education and experience:

What do you like to listen to?

DIRECTIONS: Please indicate how strongly you agree with the following statements.
(1=not at all, 7=completely)

Music is central to my identity.	1	2	3	4	5	6	7
Music technology is central to my identity.	1	2	3	4	5	6	7
Technology is central to my identity.	1	2	3	4	5	6	7
Web-based Cloud technology is central to my identity.	1	2	3	4	5	6	7

How often do you access your music collection in the following ways?

Physical CDs/ tapes/ records	1	2	3	4	5	6	7
Digitally via a computer (MP3s, iTunes, Winamp, etc.)	1	2	3	4	5	6	7
Digitally via a mobile device (MP3 player, phone, etc.)	1	2	3	4	5	6	7
From an internet site (Pandora, YouTube, etc.)	1	2	3	4	5	6	7
From a Cloud Source (Spotify, Amazon, iCloud, etc.)	1	2	3	4	5	6	7

10. DIRECTIONS: Read each pair of statements below and circle ‘a’ or ‘b’ to indicate which statement of each pair you agree with more.

1	a.	Children get into trouble because their parents punish them too much.
	b.	The trouble with most children nowadays is that their parents are too easy with them.
2	a.	Many of the unhappy things in people's lives are partly due to bad luck.
	b.	People's misfortunes result from the mistakes they make.
3	a.	One of the major reasons why we have wars is because people don't take enough interest in politics.
	b.	There will always be wars, no matter how hard people try to prevent them.
4	a.	In the long run people get the respect they deserve in this world.
	b.	Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5	a.	The idea that teachers are unfair to students is nonsense.
	b.	Most students don't realize the extent to which their grades are influenced by accidental happenings.
6	a.	Without the right breaks one cannot be an effective leader.
	b.	Capable people who fail to become leaders have not taken advantage of their opportunities.
7	a.	No matter how hard you try some people just don't like you.
	b.	People who can't get others to like them don't understand how to get along with others.
8	a.	Heredity plays the major role in determining one's personality.
	b.	It is one's experiences in life which determine what they're like.
9	a.	I have often found that what is going to happen will happen.
	b.	Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10	a.	In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
	b.	Many times exam questions tend to be so unrelated to course work that studying is really useless.
11	a.	Becoming a success is a matter of hard work, luck has little or nothing to do with it.
	b.	Getting a good job depends mainly on being in the right place at the right time.
12	a.	The average citizen can have an influence in government decisions.
	b.	This world is run by the few people in power, and there is not much the little guy can do about it.
13	a.	When I make plans, I am almost certain that I can make them work.
	b.	It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14	a.	There are certain people who are just no good.
	b.	There is some good in everybody.
15	a.	In my case getting what I want has little or nothing to do with luck.
	b.	Many times we might just as well decide what to do by flipping a coin.

16	a.	Who gets to be the boss often depends on who was lucky enough to be in the right place first.
	b.	Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17	a.	As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
	b.	By taking an active part in political and social affairs the people can control world events.
18	a.	Most people don't realize the extent to which their lives are controlled by accidental happenings.
	b.	There really is no such thing as "luck."
19	a.	One should always be willing to admit mistakes.
	b.	It is usually best to cover up one's mistakes.
20	a.	It is hard to know whether or not a person really likes you.
	b.	How many friends you have depends upon how nice a person you are.
21	a.	In the long run the bad things that happen to us are balanced by the good ones.
	b.	Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22	a.	With enough effort we can wipe out political corruption.
	b.	It is difficult for people to have much control over the things politicians do in office.
23	a.	Sometimes I can't understand how teachers arrive at the grades they give.
	b.	There is a direct connection between how hard I study and the grades I get.
24	a.	A good leader expects people to decide for themselves what they should do.
	b.	A good leader makes it clear to everybody what their jobs are.
25	a.	Many times I feel that I have little influence over the things that happen to me.
	b.	It is impossible for me to believe that chance or luck plays an important role in my life.
26	a.	People are lonely because they don't try to be friendly.
	b.	There's not much use in trying too hard to please people, if they like you, they like you.
27	a.	There is too much emphasis on athletics in high school.
	b.	Team sports are an excellent way to build character.
28	a.	What happens to me is my own doing.
	b.	Sometimes I feel that I don't have enough control over the direction my life is taking.
29	a.	Most of the time I can't understand why politicians behave the way they do.
	b.	In the long run the people are responsible for bad government on a national as well as on a local level.

Yesterday

We would like to learn what you did and how you felt yesterday. Not all days are the same – some are better, some are worse and others are pretty typical. Here we are only asking you about yesterday.
Because many people find it difficult to remember what exactly they did and

experienced, we will do this in three steps:

1. We will ask you when you woke up and when you went to sleep yesterday.
2. We'd like you to reconstruct what your day was like, as if you were writing in your diary. Where were you? What did you do and experience? How did you feel? Answering the questions on the next page will help you to reconstruct your day. This is to help you remember and describe what happened yesterday.
3. After you have finished reconstructing your day in your diary, we will ask you specific questions about this time (these questions will follow). In answering these questions, we'd like you to consult your diary page and the notes you made to remind you of what you did and how you felt.

To begin, please circle the day of the week that YESTERDAY was:

Monday Tuesday Wednesday Thursday
Friday Saturday Sunday

About what time did you wake up yesterday? _____

And when did you go to sleep? _____

On the next page, please describe your day. Think of your day as a continuous series of scenes or episodes in a film. Give each episode a brief name that will help you remember it (for example, "commuting to work", or "at lunch with B", where B is a person or a group of people). Write down the approximate times at which each episode began and ended. The episodes people identify usually last between 15 minutes and 2 hours. Indications of the end of an episode might be going to a different location, ending one activity and starting another, or a change in the people you are interacting with.
There are sections for each part of the day:

- Morning (from waking up until lunch),
- Afternoon (from lunch until dinner), and
- Evening (from dinner until you went to bed).

There is room to list 10 episodes for each part of the day, although you may not need that many, depending on your day. It is not necessary to fill up all of the spaces – use the breakdown of your day that makes the most sense to you and best captures what you did and how you felt.
Try to remember each episode in detail, and write a few words that will remind you of exactly what was going on. Also, try to remember how you felt, and whether music was involved. What you write only has to make sense to you, and to help you remember what happened when you are answering the later questions.

Morning
(from waking up until just before lunch)

Episode name and notes

1M _____

2M _____

3M _____

4M _____

5M _____

6M _____

7M _____

8M _____

9M _____

10M _____

Afternoon
(from lunch until just before dinner)

1A Lunch _____

2A _____

3A _____

4A _____

5A _____

6A _____

7A _____

8A _____

9A _____

10A _____

Evening
(from dinnertime until just before you went to sleep)

1E Dinnertime _____

2E _____

3E _____

4E _____

5E _____

6E _____

7E _____

8E _____

9E _____

10E _____

DIRECTIONS:
Now, we would like to learn in more detail about how you felt during those episodes. For each episode, there are several questions about what happened and how you felt. Please use the notes on your diary pages as often as you need to. Please answer the questions for every episode you recorded, beginning with the first episode in the Morning. To make it easier to keep track, we will ask you to write down the number of the episode that is at the end of the line where you wrote about it in your diary. For example, the first episode of the Morning was number 1M, the third episode of the Afternoon was number 3A, the second episode of the Evening was number 2E, and so forth.
It is very important that we get to hear about all of the episodes you experienced yesterday, so please be sure to answer the questions for each episode you recorded. After you have answered the questions for all of your episodes, your participation is complete.

EACH EPISODE:
About what time did this episode begin: _____ end: _____

DIRECTIONS: Please select the answer that best applies.

Where were you?

____ At home	____ Public transportation	____ At the gym
____ At a friend's house	____ Walking	____ Shopping
____ At work	____ Restaurant	____ Religious worship

____ Driving a car
____ In a car
____ Pub / Club
____ Other: (please state below)
_____
____ Concert

What were you doing?

____ Commuting
____ Shopping
____ Working
____ Volunteering
____ Exercising
____ Self-care
____ Doing housework
____ Taking care of your children
____ Preparing food
____ Eating
____ Socializing
____ Nap/ resting
____ Relaxing
____ Outdoor activities
____ Other (please specify)
_____
____ Watching TV
____ Reading
____ Listening to music
____ On the phone
____ Computer/ internet/ email
____ Intimate relations
____ Praying/ worshipping/ meditating

DIRECTIONS: Some of the pairs might seem unusual, so you'll probably feel more one way than the other. So, for each pair, mark an 'X' close to the adjective which you believe to describe your feelings better. The more appropriate that adjective seems, the closer you put your 'X' mark to it.

Pleasure: In this situation, I feel…								
Happy	____	____	____	____	____	____	____	Unhappy
Pleased	____	____	____	____	____	____	____	Annoyed
Satisfied	____	____	____	____	____	____	____	Unsatisfied
Contented	____	____	____	____	____	____	____	Melancholic
Hopeful	____	____	____	____	____	____	____	Despairing
Relaxed	____	____	____	____	____	____	____	Bored
Arousal: In this situation, I feel…								
Stimulated	____	____	____	____	____	____	____	Relaxed
Excited	____	____	____	____	____	____	____	Calm
Frenzied	____	____	____	____	____	____	____	Sluggish
Jittery	____	____	____	____	____	____	____	Dull
Wide-awake	____	____	____	____	____	____	____	Sleepy
Aroused	____	____	____	____	____	____	____	Unaroused
Dominance: In this situation, I feel...								
Controlling	____	____	____	____	____	____	____	Controlled
Influential	____	____	____	____	____	____	____	Influenced
In control	____	____	____	____	____	____	____	Cared-for
Important	____	____	____	____	____	____	____	Awed
Dominant	____	____	____	____	____	____	____	Submissive
Autonomous	____	____	____	____	____	____	____	Guided

Were you listening to music during this episode?* ___ yes ___no
(*If no, response is complete. If yes, then continue on)

How did you hear the music?

____ Mobile mp3 player	____ Computer – own collection (iTunes, Winamp, etc.)
____ Mobile telephone	____ Computer – online streaming (Spotify, LastFM, etc.)
____ Mobile gaming device	____ Stereo – mp3 device
____ Mobile CD player	____ Stereo – CD
____ Mobile cassette player	____ Stereo – cassette
____ Tablet	____ Stereo – record
____ Radio	____ In public – live artist/group/ensemble
____ TV	____ In public – recorded music

How much choice did you have in what you heard?

None	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Total

How much did you like what you heard?

Dislike very much	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Like very much

How much attention were you paying to the music?

None	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Total

DIRECTIONS: Please indicate your agreement with the following statements using the scale below. (1= not at all, 7 = completely)

Having control over hearing music in this situation is important to me because…

1	music is a form of social support.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
2	the music acts as a companion.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
3	the music distracts me from other things.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
4	the music helps me regulate my emotions.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
5	the music helps me regain a sense of control/ is an aspect of the environment I could manage.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
6	the music modifies the perception of pain/ distress.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
7	the music increases my coping abilities/ helps me cope.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
8	the music allowed me to fulfil a goal.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
9	the music assisted me in reaching a broader goal.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
10	the music allowed me to express a preference.	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

Appendix J

Information Sheet

01 March 2014

Title of Research: Everyday Music Listening Study

Name of Researchers:

Amanda Krause, Researcher, a.krause@postgrad.curtin.edu.au
Adrian North, Research Supervisor, adrian.north@curtin.edu.au
Brody Heritage, Research Supervisor, b.heritage@curtin.edu.au

Purpose of the Research:
Amanda Krause, a post-graduate student at Curtin University, is conducting research on everyday musical experiences. The purpose of this study is to examine how people respond to music listening in everyday contexts.

What You Will Be Asked to Do:
Firstly, you will be asked to complete a short questionnaire about yourself, which should take no more than 8 minutes. Secondly, you will be given instructions via email regarding a 15 minute task involving listening to music. After completing the task, you will be asked to complete a short questionnaire about your experience (5 minutes).
Upon completing this study, you are eligible to enter your name into a draw for 1 of 4 $50 iTunes vouchers.*

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions. Please contact Amanda Krause (a.krause@postgrad.curtin.edu.au) if you have any issues accessing the study.

Risks:
We do not foresee any risks or discomfort from your participation in this research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Curtin University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use for a period of five years.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (a.krause@postgrad.curtin.edu.au) or Adrian North (adrian.north@curtin.edu.au).

Thank you for your participation in this research study.

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number: Psych and SP 2013 - 78). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au. Any complaints or concerns about the conduct of this research can also be directed here.

*To be in the draw for the iTunes voucher you must complete the experiment by 12 June 2014. The Terms and Conditions of this competition are as follows.

Everyday Music Listening Study - iTunes voucher: Terms and Conditions

1. Instructions on how to enter and other details contained within promotional advertisements for this competition form part of the conditions of entry.
2. By entering the competition, entrants agree to abide by these Terms and Conditions.
3. The Terms and Conditions of this competition are governed by the laws of the State of Western Australia.
4. The competition is being run by Curtin University of Technology, GPO Box U1987, Perth, Western Australia, 6845 ("Curtin").
5. The iTunes voucher Competition ("the competition") commences at 8:00 am AWST on Wednesday, 05 March 2014.
6. The closing time for entering the competition is 8:00 am AWST on Thursday, 12 June 2014.
7. Entry to the competition is limited to participants who complete the Everyday Music Listening Study ("Study").
8. To enter the competition, the entrant must complete the study and submit the questionnaire before the closing time and date.
9. Entry to the competition is free. Entrants will be responsible for all costs associated with entering the competition, which may include costs associated with accessing the internet.
10. Entrants may only enter the competition once.
11. There will be four (4) prizes. The prize will be an iTunes voucher worth $50 AUD.
12. There will be one (1) draw at 10:00 am Australian Western Standard Time on Friday, 13 June 2014 at building 603, 6 Sarich Way Technology Park Bentley.
13. The draw will be by Random number generator from all eligible entries, with the first entry drawn being the prize winner.
14. The prize winner will be contacted within seven (7) days of the draw by the

email address supplied by the entrant on the Survey form.

15. If the prize winner does not respond to claim the prize within twenty-one (21) days of the draw, a re-draw will be conducted within thirty (30) days of the original draw date, in the same location, and with the same method.
16. The prize winner will be responsible for all costs associated with collecting and using the prize.
17. By entering the competition the entrant agrees that they are over the age of 18 years.
18. The prize is not redeemable for cash or an alternative prize.
19. The prize is not transferrable.
20. The prize winner's name may be published on the Curtin website and/or newsletters. By entering the competition, entrants grant Curtin permission to use their full name and work location on its website for up to six months from the date of the draw.
21. Curtin is not responsible in any manner whatsoever for any problems or any financial costs incurred, or any combination thereof, including any injury or damage to participants or any other persons related to or resulting from participation in this competition.
22. Curtin accepts no responsibility and shall not be held legally liable or responsible for any accident, loss, injury or damage to any individual or property whether direct or indirect, whether in contract, tort, negligence or otherwise arising out of or in connection with the competition or the prize, either during or after the competition.
23. Entry into the competition signifies acceptance of all conditions. Entrants are required to abide by the Terms and Conditions as presented.
24. Curtin's decision will be final and no correspondence will be entered into.
25. Personal information provided by an entrant to Curtin for the purpose of entering the Competition will be collected, used and disclosed in accordance with Curtin's Privacy Statement. A copy of the privacy statement is available at http://global.curtin.edu.au/legal/privacy.cfm. Personal information collected will be kept strictly confidential and will not be sold, reused, rented, loaned or otherwise disclosed to any third party otherwise than in accordance with the Curtin privacy statement and these Terms and Conditions.

Consent Form

Title of Research: Everyday Music Listening Study

Name of Researchers:

Amanda Krause, Researcher, a.krause@postgrad.curtin.edu.au
Adrian North, Research Supervisor, adrian.north@curtin.edu.au
Brody Heritage, Research Supervisor, b.heritage@curtin.edu.au

Purpose of the Research:

Amanda Krause, a post-graduate student at Curtin University, is conducting research on everyday music listening experiences. The purpose of this study is to examine how people respond to music listening in everyday contexts.

By signing this form (*implied by clicking their agreement online),

- I acknowledge that I have been informed of and understand the purposes of the study.
- I have been given the opportunity to ask questions about the study.
- I understand that after I sign and return this consent form it will be retained by the researcher as a record of my consent.
- I understand that my participation in this research is voluntary, and that I can withdraw from this study at any time without negative consequences.
- I understand that this study may be published; however, no information will be used to identify me.
- I agree to participate in the study as outlined to me.

Participant Name: _____

Participant Signature: _____ Date: _____

Debriefing Information
Everyday Music Listening Study

Thank you for your participation in this research study. Your participation is greatly appreciated.

The purpose of this study was to explore how individuals respond to music in everyday situations. In particular, we'd like to have a better understanding of the relative importance of liking the music, how arousing the music is, and how much control individuals have over the music in terms of how individuals feel in response. Participants were given instructions as to what music (their own choice versus researcher chosen) they could listen to in a certain context (while in the laboratory, while commuting on public transportation, or when at the gym). We were interested as to whether altering people's ability to have choice over their listening as well as the location would influence how people rated their responses.

Further Questions?
If you have any further questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (a.krause@postgrad.curtin.edu.au) or Adrian North (adrian.north@curtin.edu.au).

Please note that if you received an mp3 file for the exclusive use of participating in this study, it is your responsibility to delete this file completely from your email and device now that you have completed the study. Due to copyright protection, the music recordings are copyright protected and must not be shared with other people and must be deleted (destroyed) following your completion of this study. Use of this

music file for the singular purpose of participating in the Everyday Music Listening Study is legal in Australia under the tertiary music license: this recording has been made by Curtin University of Technology under the express terms of an educational license between it, ARIA, AMCOS, APRA, and PPCA and may only be used as authorized by the University pursuant to the terms of that license.

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number: Psych and SP 2013 - 78). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au. Any complaints or concerns about the conduct of this research can also be directed here.

Appendix K

Note. This questionnaire was completed online using the Qualtrics survey software. The content is reproduced below.

Background Measure

About Yourself

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____ Country of Residence: _____

Do you have a university level qualification (e.g., Bachelor's degree)? _ Yes _ No

How important do you consider the following to be in your life?
(Please mark with an 'X', 1=not at all, 7=extremely)

Music	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
Technology	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

On average, how many hours do you listen to music daily? _____ hours

On average, how many hours do you interact with technology daily? _____ hours

Musical education and experience:

What do you like to listen to?

DIRECTIONS: Please indicate how strongly you agree with the following statements.
(1=not at all, 7=completely)

Music is central to my identity.	1	2	3	4	5	6	7
Music technology is central to my identity.	1	2	3	4	5	6	7
Technology is central to my identity.	1	2	3	4	5	6	7
Web-based Cloud technology is central to my identity.	1	2	3	4	5	6	7

DIRECTIONS: For each pair, mark your answer close to the adjective that you believe better describes yourself. The more appropriate that adjective seems, the closer you put your choice.

Uncreative	__	__	__	__	__	__	__	Creative
Lazy	__	__	__	__	__	__	__	Hard-Working
Shy	__	__	__	__	__	__	__	Outgoing
Headstrong	__	__	__	__	__	__	__	Gentle
Nervous	__	__	__	__	__	__	__	At Ease

How often do you access your music collection in the following ways?

Physical CDs/ tapes/ records	1	2	3	4	5	6	7
Digitally via a computer (MP3s, iTunes, Winamp, etc.)	1	2	3	4	5	6	7
Digitally via a mobile device (MP3 player, phone, etc.)	1	2	3	4	5	6	7
From an internet site (Pandora, YouTube, etc.)	1	2	3	4	5	6	7
From a Cloud Source (Spotify, Amazon, iCloud, etc.)	1	2	3	4	5	6	7

Please indicate how often you use the following methods to select what music you listen to. (1=never, 7=always)

Specific Artist/ Album/ Song	1	2	3	4	5	6	7
Playlist (yours or someone else's)	1	2	3	4	5	6	7
Random/Shuffle	1	2	3	4	5	6	7
Other (internet radio, radio, etc.)	1	2	3	4	5	6	7

Response Measure

What music were you listening to?

_____ Music from my own collection
_____ Music the experimenter gave me

Where were you?

_____ In the laboratory
_____ On public transportation
_____ At the gym

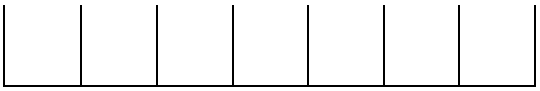
How often do you find yourself in the situation you were just in? (1 = Never, 7 = A lot)	1	2	3	4	5	6	7

Please answer the following questions using the scale.

	not at all						very much
How much did you like the music you listened to?	1	2	3	4	5	6	7
How familiar was the music?	1	2	3	4	5	6	7
How arousing did you consider the music to be? (arousing means loud/fast/energizing/etc.)	1	2	3	4	5	6	7
How much control did you feel you had over the music that you listened to?	1	2	3	4	5	6	7
How much do you feel that the presence of music affected your mood?	1	2	3	4	5	6	7
How much did you enjoy the overall episode?	1	2	3	4	5	6	7
How arousing did you find the overall episode?	1	2	3	4	5	6	7
How much control did you feel you had over the entire episode?	1	2	3	4	5	6	7

How did you feel during the episode?	not at all						very much
Festive	1	2	3	4	5	6	7
Bored	1	2	3	4	5	6	7
Excited	1	2	3	4	5	6	7
Relaxed	1	2	3	4	5	6	7
Disconcerted	1	2	3	4	5	6	7
Unstimulated	1	2	3	4	5	6	7
Peaceful	1	2	3	4	5	6	7
Unsettled	1	2	3	4	5	6	7
How pleasant was your mood?	1	2	3	4	5	6	7
How sleepy were you?	1	2	3	4	5	6	7
How much do you feel your mood was determined by the physical situation you were	1	2	3	4	5	6	7

in?



Appendix L

The experimenter-provided playlist included “Take me home” by Cash Cash, “Rather be” by Clean Bandit, “Best day of my life” by American Authors, “Shot me down” by David Guetta, and part of “Braveheart” by Neon Jungle so that the playlist lasted 15.08 minutes.

Appendix M

Participant Information and Consent Form

08 July 2011

Title of Research: Cloud Listening

Name of Researchers:

Amanda Krause, Researcher, aek5@hw.ac.uk
Adrian North, Research Supervisor, a.north@hw.ac.uk

Purpose of the Research:
Under the supervision of Adrian North, Professor at Heriot Watt University, Amanda Krause, a post-graduate student in Applied Psychology, is conducting research on how individuals interact with music on a daily basis. The purpose of this study is to examine how individuals access and listen to music.

What You Will Be Asked to Do:
You will be asked to complete a questionnaire, which should take no more than 15 minutes. This questionnaire includes questions about your age, gender, occupation, which devices you use to listen to music, whether you consider music and technology important to your identity, and your usage of different digital listening technology. You'll also answer the degree to which a number of different statements represent yourself. After completing the questionnaire, your participation in this study is complete.

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in the research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Heriot Watt University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (aek5@hw.ac.uk) or Adrian North (a.north@hw.ac.uk).

Thank you for your participation in this research study.

By signing this form, I am attesting that I have read and understand the nature of this project and consent to participate in this study.

Participant Signature: _____ Date: _____

Appendix N

Questionnaire

The aim of this study is to explore how individuals interact with music on a daily basis. Remember that your participation is completely voluntary and that you have the right to withdraw at any time. Thank you for your participation!

About Yourself

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____ Country of Residence: _____

Do you have a university level qualification (e.g., Bachelor's degree)? _ Yes _ No

How important do you consider the following to be in your life?
(Please mark with an 'X', 1=not at all, 7=extremely)

Music	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
Technology	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

On average, how many hours do you listen to music daily? _____ hours

On average, how many hours do you interact with technology daily? _____ hours

DIRECTIONS: Please indicate, on an average day, how many minutes you use the following devices to listen to music. (For example: 120 minutes (if 2 hours),etc.)

Mobile MP3 Player	
Mobile Telephone	
Mobile Gaming Device	
Own Collection on a Computer *(mp3s, iTunes, winamp, etc)*	
Streaming from Website *(YouTube, etc.)*	
Internet Radio *(Pandora, LastFM, etc.)*	
Cloud account *(Spotify, Amazon, etc.)*	
MP3 stereo	
CD player *(stereo and/or mobile)*	
Cassette player *(via stereo and/or mobile)*	
Record player	
Radio	
TV	

DIRECTIONS: Please indicate how strongly you agree with the following statements.

(1=not at all, 7=completely)

Music is central to my identity.	1	2	3	4	5	6	7
Music technology is central to my identity.	1	2	3	4	5	6	7
Technology is central to my identity.	1	2	3	4	5	6	7
Web-based Cloud technology is central to my identity.	1	2	3	4	5	6	7

DIRECTIONS: Please mark the degree to which the statements below describe yourself. (1=not at all, 5=very well)
NOTE: DLT stands for 'Digital Listening Technology' which broadly refers to technology, applications, and devices that allow you to listen to music digitally. These include, but are not limited to, computer applications (such as iTunes, Winamp, etc.), mobile devices (such as MP3 players, phones, and tablets), Internet streaming applications (such as Internet radio stations, YouTube, Vevo, Pandora, etc.), and cloud-based applications (such as Spotify, Amazon, iCloud, etc.).

I usually provide information about new DLT to others.	1	2	3	4	5
Using DLT bores me.	1	2	3	4	5
I feel confident using DLT.	1	2	3	4	5
When using DLT, I am playful and spontaneous	1	2	3	4	5
I can use DLT only with help.	1	2	3	4	5
I do not intend to use DLT in the future.	1	2	3	4	5
I regularly seek new DLT experiences.	1	2	3	4	5
Even if I haven't heard about it before, I will consider trying a new DLT.	1	2	3	4	5
DLT is not beneficial to me.	1	2	3	4	5
Other people rarely come to me for advice about DLT.	1	2	3	4	5
I have fun interacting with DLT.	1	2	3	4	5
The range of DLT options available to me are overwhelming at times.	1	2	3	4	5
I find DLT useful.	1	2	3	4	5
My opinions about DLT do not seem to count with others.	1	2	3	4	5
I find DLT easy to use.	1	2	3	4	5
I often influence people's opinions about DLT.	1	2	3	4	5
I view DLT only as a tool to access music.	1	2	3	4	5
I can figure out DLT without help.	1	2	3	4	5
In general, I am the last in my circle of friends to know about the latest DLT.	1	2	3	4	5
I plan to use DLT in the future.	1	2	3	4	5
I like to keep things simple when using DLT.	1	2	3	4	5
In general, I am hesitant to try new DLT.	1	2	3	4	5
I like to find some new ways to use DLT.	1	2	3	4	5
I find DLT intimidating.	1	2	3	4	5
I know about new DLT before other people.	1	2	3	4	5
I find using DLT frustrating.	1	2	3	4	5

DIRECTIONS: For each pair, mark your answer close to the adjective which you believe better describes yourself. The more appropriate that adjective seems, the closer you put your choice.

Uncreative	__	__	__	__	__	__	__	Creative
Lazy	__	__	__	__	__	__	__	Hard-Working
Shy	__	__	__	__	__	__	__	Outgoing
Headstrong	__	__	__	__	__	__	__	Gentle
Nervous	__	__	__	__	__	__	__	At Ease

How often do you access your music collection in the following ways? (1=never, 7=always)

Physical CDs/ tapes/ records	1	2	3	4	5	6	7
Digitally via a computer (MP3s, iTunes, Winamp, etc.)	1	2	3	4	5	6	7
Digitally via a mobile device (MP3 player, phone, etc.)	1	2	3	4	5	6	7
From an internet site (Pandora, YouTube, etc.)	1	2	3	4	5	6	7
From a Cloud Source (Spotify, Amazon, iCloud, etc.)	1	2	3	4	5	6	7

Irrespective of your degree of confidence in using this way, how much would you like to use the following to listen to music? (1=not at all, 7=extremely)

Physical CDs/ tapes/ records	1	2	3	4	5	6	7
A computer application (Winamp, iTunes, etc.)	1	2	3	4	5	6	7
A mobile device (MP3 player, phone, tablet)	1	2	3	4	5	6	7
An internet website (YouTube, Pandora, etc.)	1	2	3	4	5	6	7
A cloud based account (Spotify, Amazon, iCloud, etc.)	1	2	3	4	5	6	7

Please tick the one you use most often.

☐ Physical CDs/ Tapes/ Records
☐ Digitally via a Computer
☐ A Mobile Device
☐ Internet Source (Pandora, YouTube, etc.)
☐ Cloud Source (Spotify, Amazon, etc.)

For the method you use most often, how much do you consider the following to be advantages of that method in particular over the other ways of managing and listening to a music collection? (1=not an advantage at all, 7=very much an advantage)

Ease of use	1	2	3	4	5	6	7
Storage size/ space	1	2	3	4	5	6	7
Accessibility	1	2	3	4	5	6	7
Familiarity	1	2	3	4	5	6	7
Centralization	1	2	3	4	5	6	7

User control	1	2	3	4	5	6	7
Latest technology	1	2	3	4	5	6	7
Management Ease	1	2	3	4	5	6	7
Compatibility	1	2	3	4	5	6	7
Financial reasons	1	2	3	4	5	6	7
Portability	1	2	3	4	5	6	7
Other: _____	1	2	3	4	5	6	7

DIRECTIONS: Please mark the degree to which you agree with the following statements.
(1=not at all, 5=completely)

I am confident about my ability to use digital technology in order to listen to music…

…on the computer.	1	2	3	4	5
…using a mobile device.	1	2	3	4	5
…using the internet.	1	2	3	4	5
…using cloud technology.	1	2	3	4	5

I have mastered the skills necessary to listen to music…

…on the computer.	1	2	3	4	5
…using a mobile device.	1	2	3	4	5
…using the internet.	1	2	3	4	5
…using cloud technology.	1	2	3	4	5

I believe in my capabilities of using digital technology to listen to music...

…on the computer.	1	2	3	4	5
…using a mobile device.	1	2	3	4	5
…using the internet.	1	2	3	4	5
…using cloud technology.	1	2	3	4	5

Thank you for completing this questionnaire!

This research study is led by Amanda Krause, a PhD student at Heriot Watt University. The purpose of this questionnaire is to better understand how people interact with music on a daily basis. Specifically, you have just answered questions related to the ways in which you access and listen to music digitally.

If you have any questions or would like further information about this research study, please email researchaboutlistening@gmail.com.

Additionally, you can find information and participate in other studies by visiting www.researchaboutlistening.com.

Appendix O

Targeted concept	Item	Adapted from
Behavior Intention to Use	I do not intend to use digital listening technology in the future.	Agarwal & Karahana, 2000; Mahatanankoon, 2007
	I plan to use digital listening technology in the future.	Agarwal & Karahana, 2000; Mahatanankoon, 2007
Computer Self-Efficacy/ Anxiety	I can figure out digital listening technology without help.	Thatcher & Perrewé, 2004
	I can use digital listening technology only with help.	Thatcher & Perrewé, 2004
	I feel confident using digital listening technology.	Thatcher & Perrewé, 2004
	The range of digital listening technology options available to me are overwhelming at times.	Thatcher & Perrewé, 2004
Individual Playfulness	I have fun interacting with digital listening technology.	Agarwal & Karahana, 2000; Mahatanankoon, 2007; Thatcher & Perrewé, 2004
	I view digital listening technology only as a tool to access music.	Agarwal & Karahana, 2000; Mahatanankoon, 2007
	Using digital listening technology bores me.	Agarwal & Karahana, 2000
	When using digital listening technology, I am playful and spontaneous	Agarwal & Karahana, 2000; Mahatanankoon, 2007
Opinion Leadership	I often influence people's opinions about digital listening technology.	Goldsmith, et al., 2003
	I usually provide information about new digital listening technology to others.	Goldsmith, Flynn, & Goldsmith, 2003
	My opinions about digital listening technology do not seem to count with others.	Goldsmith,et al., 2003
	Other people rarely come to me for advice about digital listening technology.	Goldsmith, et al., 2003
Optimum Stimulation Level (arousal)	I find digital listening technology intimidating.	Agarwal & Karahana, 2000; Mahatanankoon, 2007; Thatcher & Perrewé, 2004; Yi, et al., 2006
	I like to find some new ways to use digital listening technology.	Agarwal & Karahana, 2000; Mahatanankoon, 2007; Thatcher & Perrewé, 2004; Yi, et al., 2006
	I like to keep things simple when using digital listening technology.	Mahatanankoon, 2007; Yi, et al., 2006
	I regularly seek new digital listening technology experiences.	Mahatanankoon, 2007; Thatcher & Perrewé, 2004; Yi, et al., 2006
Perceived	Digital listening technology is not	Yi, et al., 2006

Ease of Use/ Usefulness	beneficial to me.	
	I find digital listening technology easy to use.	Yi, et al., 2006
Perceived Ease of Use/ Usefulness	I find digital listening technology useful.	Agarwal & Karahana, 2000; Yi, et al., 2006
	I find using digital listening technology frustrating.	Yi, et al., 2006
Personal Innovative-ness	Even if I haven't heard about it before, I will consider trying a new digital listening technology.	Agarwal & Karahana, 2000; Goldsmith, et al., 2003; Mahatanankoon, 2007; Thatcher & Perrewé, 2004; Yi, et al., 2006
	I know about new digital listening technology before other people.	Goldsmith, et al., 2003; Mahatanankoon, 2007
	In general, I am hesitant to try new digital listening technology.	Agarwal & Karahana, 2000; Mahatanankoon, 2007; Thatcher & Perrewé, 2004; Yi, et al., 2006
	In general, I am the last in my circle of friends to know about the latest digital listening technology.	Agarwal & Karahana, 2000; Goldsmith, et al., 2003; Yi, et al., 2006

Appendix P

Participant Information and Consent Form

08 July 2011

Title of Research: Future Listening

Name of Researchers:
Amanda Krause, Researcher, aek5@hw.ac.uk
Adrian North, Research Supervisor, a.north@hw.ac.uk

Purpose of the Research:
Under the supervision of Adrian North, Professor at Heriot Watt University, Amanda Krause, a post-graduate student in Applied Psychology, is conducting research on how individuals interact with music on a daily basis. The purpose of this study is to examine how individuals listen to (and plan to listen to) music.

What You Will Be Asked to Do:
You will be asked to complete a questionnaire, which should take no more than 15 minutes. This questionnaire includes questions about your age, gender, occupation, which devices you use to listen to music, whether you consider music and technology important to your identity, and your usage of different digital listening technology. You'll also answer the degree to which a number of different statements represent yourself. After completing the questionnaire, your participation in this study is complete.

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in the research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Heriot Watt University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (aek5@hw.ac.uk) or Adrian North (a.north@hw.ac.uk).

Thank you for your participation in this research study.

By signing this form, I am attesting that I have read and understand the nature of this project and consent to participate in this study.

Participant Signature: _____ Date: _____

Appendix Q

Questionnaire

The aim of this study is to explore how individuals interact with music on a daily basis. Remember that your participation is completely voluntary and that you have the right to withdraw at any time. Thank you for your participation!

About Yourself

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____ Country of Residence: _____

Do you have a university level qualification (e.g., Bachelor's degree)? _____ Yes _____ No

How important do you consider the following to be in your life?
(Please mark with an 'X', 1=not at all, 7=extremely)

Music	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
Technology	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

On average, how many hours do you listen to music daily? _____ hours

On average, how many hours do you interact with technology daily? _____ hours

1. DIRECTIONS: Please indicate, on an average day, how many minutes you use the following devices to listen to music. (For example: 120 minutes (if 2 hours),etc.)

Mobile MP3 Player	
Mobile Telephone	
Mobile Gaming Device	
Own Collection on a Computer *(mp3s, iTunes, winamp, etc)*	
Streaming from Website *(YouTube, etc.)*	
Internet Radio *(Pandora, LastFM, etc.)*	
Cloud account *(Spotify, Amazon, etc.)*	
MP3 stereo	
CD player *(stereo and/or mobile)*	
Cassette player *(via stereo and/or mobile)*	
Record player	
Radio	
TV	

2. DIRECTIONS: Please indicate how strongly you agree with the following statements. (1=not at all, 7=completely)

Music is central to my identity.	1	2	3	4	5	6	7
Music technology is central to my identity.	1	2	3	4	5	6	7
Technology is central to my identity.	1	2	3	4	5	6	7
Web-based Cloud technology is central to my identity.	1	2	3	4	5	6	7

3. DIRECTIONS: For each pair, mark your answer close to the adjective which you believe better describes yourself. The more appropriate that adjective seems, the closer you put your choice.

Uncreative	__	__	__	__	__	__	__	Creative
Lazy	__	__	__	__	__	__	__	Hard-Working
Shy	__	__	__	__	__	__	__	Outgoing
Headstrong	__	__	__	__	__	__	__	Gentle
Nervous	__	__	__	__	__	__	__	At Ease

4. DIRECTIONS: Read each item and answer 'How characteristic or true is this of me?' as honestly as you can. Please provide a rating on a scale from 1=very uncharacteristic to 5=very characteristic.

I believe that a person's day should be planned ahead each morning.	1	2	3	4	5
If I don't get something done on time, I don't worry about it.	1	2	3	4	5
Thinking about the future is pleasant to me.	1	2	3	4	5
I believe that getting together with friends to party is one of life's important pleasures.	1	2	3	4	5
When I want to achieve something, I set goals and consider specific means of reaching those goals.	1	2	3	4	5
Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.	1	2	3	4	5
I do things impulsively, making decisions on the spur of the moment.	1	2	3	4	5
It seems to me that my future plans are pretty well laid out.	1	2	3	4	5
I think that it's useless to plan too far ahead because things hardly ever come out the way you planned anyway.	1	2	3	4	5
I try to live one day at a time.	1	2	3	4	5
It upsets me to be late for appointments.	1	2	3	4	5
I complete projects on time by making steady progress.	1	2	3	4	5
It's fun to gamble when I have some extra money.	1	2	3	4	5
I tend to lose my temper when I'm provoked.	1	2	3	4	5

I feel that it's more important to enjoy what you are doing than get the work done on time.	1	2	3	4	5
I get irritated at people who keep me waiting when we've agreed to meet at a given time.	1	2	3	4	5
I don't do things that will be good for me if they don't feel good now.	1	2	3	4	5
I make lists of things to do.	1	2	3	4	5
I keep working at a difficult uninteresting task if it will help me get ahead.	1	2	3	4	5
I get drunk at parties.	1	2	3	4	5
I am able to resist temptations when I know there is work to be done.	1	2	3	4	5
I take risks to put excitement into my life.	1	2	3	4	5

5. DIRECTIONS: Please mark the degree to which the statements below describe yourself. (1=not at all, 5=very well)
NOTE: DLT stands for 'Digital Listening Technology' which broadly refers to technology, applications, and devices that allow you to listen to music digitally. These include, but are not limited to, computer applications (such as iTunes, Winamp, etc.), mobile devices (such as MP3 players, phones, and tablets), Internet streaming applications (such as Internet radio stations, YouTube, Vevo, Pandora, etc.), and cloud-based applications (such as Spotify, Amazon, iCloud).

I usually provide information about new DLT to others.	1	2	3	4	5
Using DLT bores me.	1	2	3	4	5
I feel confident using DLT.	1	2	3	4	5
When using DLT, I am playful and spontaneous	1	2	3	4	5
I can use DLT only with help.	1	2	3	4	5
I do not intend to use DLT in the future.	1	2	3	4	5
I regularly seek new DLT experiences.	1	2	3	4	5
Even if I haven't heard about it before, I will consider trying a new DLT.	1	2	3	4	5
DLT is not beneficial to me.	1	2	3	4	5
Other people rarely come to me for advice about DLT.	1	2	3	4	5
I have fun interacting with DLT.	1	2	3	4	5
The range of DLT options available to me are overwhelming at times.	1	2	3	4	5
I find DLT useful.	1	2	3	4	5
My opinions about DLT do not seem to count with others.	1	2	3	4	5
I find DLT easy to use.	1	2	3	4	5
I often influence people’s opinions about DLT.	1	2	3	4	5
I view DLT only as a tool to access music.	1	2	3	4	5
I can figure out DLT without help.	1	2	3	4	5
In general, I am the last in my circle of friends to know about the latest DLT.	1	2	3	4	5
I plan to use DLT in the future.	1	2	3	4	5

I like to keep things simple when using DLT.	1	2	3	4	5
In general, I am hesitant to try new DLT.	1	2	3	4	5
I like to find some new ways to use DLT.	1	2	3	4	5
I find DLT intimidating.	1	2	3	4	5
I know about new DLT before other people.	1	2	3	4	5
I find using DLT frustrating.	1	2	3	4	5

6. DIRECTIONS: Please indicate how often you use the following methods to select what music you listen to. (1=never, 7=always)

Specific Artist/ Album/ Song	1	2	3	4	5	6	7
Playlist (yours or someone else's)	1	2	3	4	5	6	7
Random/Shuffle	1	2	3	4	5	6	7
Other (internet radio, radio, etc.)	1	2	3	4	5	6	7

7. DIRECTIONS: Please mark the degree to which you agree with the statements below. (1=not at all, 7=completely)

I am confident about my ability to make playlists.	1	2	3	4	5
I have mastered the skills necessary to make playlists.	1	2	3	4	5

8. DIRECTIONS: Please answer how likely you are to make a playlist: (1=not at all, 7=entirely)

...based on a music artist/group.	1	2	3	4	5	6	7
...based on a genre.	1	2	3	4	5	6	7
...based on a specific situation or activity.	1	2	3	4	5	6	7
…based on a feeling/emotion/mood.	1	2	3	4	5	6	7
...based on time (holiday, occasion, season, etc.)	1	2	3	4	5	6	7

...for a house party with friends	1	2	3	4	5	6	7
...for commuting on public transportation	1	2	3	4	5	6	7
...to use while doing the washing up/ ironing	1	2	3	4	5	6	7
…to listen to before going to sleep	1	2	3	4	5	6	7
…for a posh cocktail reception	1	2	3	4	5	6	7
…to listen to after a long day of work	1	2	3	4	5	6	7
…for a wedding	1	2	3	4	5	6	7
…to use while jogging with an mp3 player	1	2	3	4	5	6	7

10. DIRECTIONS: Read each pair of statements below and circle ‘a’ or ‘b’ to indicate which statement of each pair you agree with more.

1	a.	Children get into trouble because their parents punish them too much.
	b.	The trouble with most children nowadays is that their parents are too easy with them.
2	a.	Many of the unhappy things in people's lives are partly due to bad luck.
	b.	People's misfortunes result from the mistakes they make.
3	a.	One of the major reasons why we have wars is because people don't take enough interest in politics.
	b.	There will always be wars, no matter how hard people try to prevent them.
4	a.	In the long run people get the respect they deserve in this world.
	b.	Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5	a.	The idea that teachers are unfair to students is nonsense.
	b.	Most students don't realize the extent to which their grades are influenced by accidental happenings.
6	a.	Without the right breaks one cannot be an effective leader.
	b.	Capable people who fail to become leaders have not taken advantage of their opportunities.
7	a.	No matter how hard you try some people just don't like you.
	b.	People who can't get others to like them don't understand how to get along with others.
8	a.	Heredity plays the major role in determining one's personality.
	b.	It is one's experiences in life which determine what they're like.
9	a.	I have often found that what is going to happen will happen.
	b.	Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10	a.	In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
	b.	Many times exam questions tend to be so unrelated to course work that studying is really useless.
11	a.	Becoming a success is a matter of hard work, luck has little or nothing to do with it.
	b.	Getting a good job depends mainly on being in the right place at the right time.
12	a.	The average citizen can have an influence in government decisions.
	b.	This world is run by the few people in power, and there is not much the little guy can do about it.
13	a.	When I make plans, I am almost certain that I can make them work.
	b.	It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14	a.	There are certain people who are just no good.
	b.	There is some good in everybody.
15	a.	In my case getting what I want has little or nothing to do with luck.
	b.	Many times we might just as well decide what to do by flipping a coin.
16	a.	Who gets to be the boss often depends on who was lucky enough to be in the right place first.
	b.	Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17	a.	As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
	b.	By taking an active part in political and social affairs the people can control world events.
18	a.	Most people don't realize the extent to which their lives are controlled by accidental happenings.
	b.	There really is no such thing as "luck."
19	a.	One should always be willing to admit mistakes.
	b.	It is usually best to cover up one's mistakes.
20	a.	It is hard to know whether or not a person really likes you.
	b.	How many friends you have depends upon how nice a person you are.
21	a.	In the long run the bad things that happen to us are balanced by the good ones.
	b.	Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22	a.	With enough effort we can wipe out political corruption.
	b.	It is difficult for people to have much control over the things politicians do in office.
23	a.	Sometimes I can't understand how teachers arrive at the grades they give.
	b.	There is a direct connection between how hard I study and the grades I get.
24	a.	A good leader expects people to decide for themselves what they should do.
	b.	A good leader makes it clear to everybody what their jobs are.
25	a.	Many times I feel that I have little influence over the things that happen to me.
	b.	It is impossible for me to believe that chance or luck plays an important role in my life.
26	a.	People are lonely because they don't try to be friendly.
	b.	There's not much use in trying too hard to please people, if they like you, they like you.
27	a.	There is too much emphasis on athletics in high school.
	b.	Team sports are an excellent way to build character.
28	a.	What happens to me is my own doing.
	b.	Sometimes I feel that I don't have enough control over the direction my life is taking.
29	a.	Most of the time I can't understand why politicians behave the way they do.
	b.	In the long run the people are responsible for bad government on a national as well as on a local level.

Thank you for completing this questionnaire!

The purpose of this questionnaire is to better understand how people interact with music on a daily basis. You have just answered questions related to the ways in which you listen to music digitally, with the focus specifically on playlists.

If you have any questions or would like further information about this research study, please email researchaboutlistening@gmail.com.

This research is led by Amanda Krause, a PhD student at Heriot Watt University. Additionally, you can find information and participate in other studies by visiting www.researchaboutlistening.com.

Appendix R

Transformations Made to Variables to Improve Normality

Chapter	Variable	Transformation
Chapter 9	Age	Inverse
	Music importance rating	No improvement with transformations, used original data
	Technology importance rating	No improvement with transformations, used original data
	Average daily listening (hours)	Log
	Average daily technology use (hours)	Log
	Musician interaction score	Inverse
	Surveillance score	Log
	SNS embraced use	Log
	SNS confident use	Square root
	SNS trail blazer	Square root
	Openness	Square root
	Conscientiousness	No improvement with transformations, used original data
	CAS borderline pathological score	Inverse
	Valued musician involvement score	Log
	Best friend avoidance score	Square root
	Best friend anxiety score	Square root
	Partner avoidance score	Square root
	Partner anxiety score	Square root
Chapter 10	Age	Inverse
	Music importance rating	Log
	Technology importance rating	Log
	Average daily listening (hours)	Square root
	Average daily technology use (hours)	Square root
	Facebook leisure use score	Log
	Apps use	Square root
	DLT engaged use	Square root
	DLT troubled use	Square root
	DLT uninterested use	Square root
	DLT basic use	Square root
	SNS engaged use	Log
	SNS trail blazer	Square root

SNS troubled use	Square root
Openness	Square root
Extraversion	Square root
Self-efficacy: digital technology to listen to music	Square root
Self-efficacy: web-based cloud music technology	No improvement with transformations, used original data
Self-efficacy: general Facebook account	Log
Self-efficacy: Facebook applications	Square root
Self-efficacy: Facebook music applications	Square root

Appendix S

Participant Information and Consent Form

08 July 2011

Title of Research: Social Network Fans

Name of Researchers:

Amanda Krause, Researcher, aek5@hw.ac.uk
Adrian North, Research Supervisor, a.north@hw.ac.uk

Purpose of the Research:
Under the supervision of Adrian North, Professor at Heriot Watt University, Amanda Krause, a post-graduate student in Applied Psychology, is conducting research on how individuals interact with music on a daily basis. The purpose of this study is to examine how individuals use social networks in order to gain information about their favourite musicians and whether using social networks has an impact on their experience with music.

What You Will Be Asked to Do:
You will be asked to complete a questionnaire, which should take no more than 15 minutes. This questionnaire includes questions about your age, gender, occupation, which social network devices, whether you consider music and technology important to your identity, and your usage of different digital listening technology. You'll also answer the degree to which a number of different statements are representative of you. After completing the questionnaire, your participation in this study is complete.

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in the research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Heriot Watt University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (aek5@hw.ac.uk) or Adrian North (a.north@hw.ac.uk).

Thank you for your participation in this research study.

By signing this form, I am attesting that I have read and understand the nature of this project and consent to participate in this study.

Participant Signature: _____ Date: _____

Appendix T

Questionnaire

The aim of this study is to explore how individuals interact with music and musicians on a daily basis. Remember that your participation is completely voluntary and that you have the right to withdraw at any time. Thank you for your participation!

About Yourself

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____
Country of Residence: _____

Do you have a university level qualification (e.g., Bachelor's degree)? _____ Yes _____ No

How important do you consider the following to be in your life?
(Please mark with an 'X', 1=not at all, 7=extremely)

Music	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
Technology	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

On average, how many hours do you listen to music daily? _____ hours

On average, how many hours do you interact with technology daily? _____ hours

1. DIRECTIONS: Please indicate how strongly you agree with the following statements.
(1=not at all, 7= completely)

Music is central to my identity.	1	2	3	4	5	6	7
Music technology is central to my identity.	1	2	3	4	5	6	7
Technology is central to my identity.	1	2	3	4	5	6	7
Web-based Cloud technology is central to my identity.	1	2	3	4	5	6	7

2. DIRECTIONS: Please estimate how many minutes during an average day you use the following: (For example: 30 minutes, 120 minutes if 2 hours, etc.)

Email *(including listservs)*	
Social Network Account(s) *(Facebook, etc.)*	
Blog Account(s) *(Wordpress, Blogspot, Tumblr, etc.)*	
Micro-Blogging Account *(Twitter, etc.)*	
Cloud Music Account *(Spotify, Amazon, etc.)*	
Internet Radio Account *(Pandora, LastFM, etc.)*	
Video Hosting Website *(YouTube, Vevo, etc.)*	

Online news/ newsfeed	
RSS Feed(s) *(BBC, NYT, etc.)*	
Online search tool *(Google, etc.)*	
Musician's Website/ fan website(s)	
Surf the Internet	
Other Internet Activity:_____	
Print Media *(newspaper, magazine, book, etc)*	
Broadcast Media *(TV, Radio)*	

3. DIRECTIONS: Please estimate how many minutes during an average day you use the following to find out about your favourite musician/music group. (For example: 30 minutes, 120 minutes if 2 hours, etc.)

Email *(including listservs)*	
Social Network Account(s) *(Facebook, etc.)*	
Blog Account(s) *(Wordpress, Blogspot, Tumblr, etc.)*	
Micro-Blogging Account *(Twitter, etc.)*	
Cloud Music Account *(Spotify, Amazon, etc.)*	
Internet Radio Account *(Pandora, LastFM, etc.)*	
Video Hosting Website *(YouTube, Vevo, etc.)*	
Online news/ newsfeed	
RSS Feed(s) *(BBC, NYT, etc.)*	
Online search tool *(Google, etc.)*	
Musician's Website/ fan website(s)	
Surf the Internet	
Other Internet Activity:_____	
Print Media *(newspaper, magazine, book, etc)*	
Broadcast Media *(TV, Radio)*	

4. DIRECTIONS: For each pair, mark your answer close to the adjective which you believe better describes yourself. The more appropriate that adjective seems, the closer you put your choice.

Uncreative	__	__	__	__	__	__	__	Creative
Lazy	__	__	__	__	__	__	__	Hard-Working
Shy	__	__	__	__	__	__	__	Outgoing
Headstrong	__	__	__	__	__	__	__	Gentle
Nervous	__	__	__	__	__	__	__	At Ease

5. DIRECTIONS: To what extent do you agree with each of the following statements about yourself?

(1= strongly disagree, 2=disagree, 3=agree, 4=strongly agree)

I feel that I am a person of worth, at least on an equal level with others.	1	2	3	4
All in all, I am inclined to think I am a failure.	1	2	3	4
I am able to do things at least as well as most people.	1	2	3	4
I feel I do not have much to be proud of.	1	2	3	4
I take a positive attitude toward myself.	1	2	3	4
On the whole, I am satisfied with myself.	1	2	3	4
I wish I could have more respect for myself.	1	2	3	4
I certainly feel useless at times.	1	2	3	4
At times I feel I am no good at all.	1	2	3	4
I feel I have a number of good qualities.	1	2	3	4

6. DIRECTIONS: Please mark the degree to which the statements below describe yourself. (1=not at all, 5=very well)

NOTE: SNS stands for 'Social Network Sites', referring to web-based, user-generated content sites that provide platforms for information sharing, video sharing, photo sharing, and blogging. Examples of social networks include, but are not limited to, Facebook, Twitter, Myspace, LinkedIn, Blogger, YouTube, Bebo, Friendster, Google+, Wordpress, Tumblr, CouchSurfing, DailyMile, Flickr, Foursquare, and LastFM.

I usually provide information about new SNS to others.	1	2	3	4	5
Using SNS bore me.	1	2	3	4	5
I feel confident using SNS.	1	2	3	4	5
When using SNS, I am playful and spontaneous.	1	2	3	4	5
I can use SNS only with help.	1	2	3	4	5
I do not intend to use SNS in the future.	1	2	3	4	5
I regularly seek new social network experiences.	1	2	3	4	5
Even if I haven't heard about it before, I will consider trying a new SNS.	1	2	3	4	5
SNS are not beneficial to me.	1	2	3	4	5
Other people rarely come to me for advice about SNS.	1	2	3	4	5
I have fun interacting with SNS.	1	2	3	4	5
I find the range of SNS options available to me overwhelming at times.	1	2	3	4	5
I find SNS useful.	1	2	3	4	5
My opinions about SNS do not seem to count with others.	1	2	3	4	5
I find SNS easy to use.	1	2	3	4	5
I often influence people's opinions about SNS.	1	2	3	4	5
I view SNS only as a tool to access information.	1	2	3	4	5
I can figure out SNS without help.	1	2	3	4	5
In general, I am the last in my circle of friends to know about the latest SNS.	1	2	3	4	5
I plan to use SNS in the future.	1	2	3	4	5
I like to keep things simple when using SNS.	1	2	3	4	5

In general, I am hesitant to try new SNS.	1	2	3	4	5
I like to find some new ways to use SNS.	1	2	3	4	5
I find SNS intimidating.	1	2	3	4	5
I know about new SNS tools before other people.	1	2	3	4	5
I find using SNS frustrating.	1	2	3	4	5

7. DIRECTIONS: Please fill in your answers to the questions below.

Of the total amount of time you spend using social networks, what percentage of time do you spend reading/following along (as opposed to actively posting information yourself)?	_____ %
Of the people you interact with using social networks, what percentage of these individuals are musicians?	_____ %
Of the time you spend using social networks, what percentage are you interacting with/following/reading/posting about musicians?	_____ %
Of the time you spend using social networks, how many minutes (on an average day) are you interacting with/ following musicians?	_____ min

8. DIRECTIONS: Please mark the degree to which you agree with the statements below. (1=not at all, 5=completely)

Being able to interact with/follow a musician using social networks enhances my experience with their music.	1	2	3	4	5
Without using social networks I would be missing out on valuable information about my favourite musicians.	1	2	3	4	5
Reading the information a musician shares on social networks does not have an influence on my opinion of them as a person.	1	2	3	4	5
Social networks allow me to connect with other fans of the musicians I like.	1	2	3	4	5
Reading the information a musician shares on social networks has an impact on my opinion of them as a musician.	1	2	3	4	5
Reading the information a musician shares on social networks has no influence on my experience of their music.	1	2	3	4	5
Musicians should use social networks as a way of interacting with their fans.	1	2	3	4	5
It makes no difference on my enjoyment of their music whether a musician uses social networks.	1	2	3	4	5
Musicians should use social networks as a way of providing information to their fans.	1	2	3	4	5

9. DIRECTIONS: Please rate your agreement with the following statements about your favourite musician.
Please rate your degree of agreement with each statement by providing a rating on a scale from 1 = 'strongly disagree' to 5 = 'strongly agree'.

I love to talk with others who admire my favourite musician.	1	2	3	4	5
I have frequent thoughts about my favourite musician, even when I don't want to.	1	2	3	4	5
My favourite musician and I have our own code so we can communicate with each other secretly (such as over the TV or via special words on the radio).	1	2	3	4	5
My favourite musician is practically perfect in every way.	1	2	3	4	5
I like watching and hearing about my favourite musician when I am in a large group of people.	1	2	3	4	5
It would be great if my favourite musician and I were locked in a room for a few days.	1	2	3	4	5
If my favourite musician saw me in a restaurant they would ask me to sit down and talk.	1	2	3	4	5
It is enjoyable just to be with others who like my favourite musician.	1	2	3	4	5
If I walked through the door of my favourite musician's home without an invitation he or she would be happy to see me.	1	2	3	4	5

10. DIRECTIONS: Please answer how much you agree with the following statements about your best friend. (1=not at all, 7=completely agree)

1. It helps to turn to this person in times of need.	1	2	3	4	5	6	7
2. I usually discuss my problems and concerns with this person.	1	2	3	4	5	6	7
3. I talk things over with this person.	1	2	3	4	5	6	7
4. I find it easy to depend on this person.	1	2	3	4	5	6	7
5. I don't feel comfortable opening up to this person.	1	2	3	4	5	6	7
6. I prefer not to show this person how I feel deep down.	1	2	3	4	5	6	7
7. I often worry that this person doesn't really care for me.	1	2	3	4	5	6	7
8. I'm afraid that this person may abandon me.	1	2	3	4	5	6	7
9. I worry that this person won't care about me as much as I care about him or her.	1	2	3	4	5	6	7

DIRECTIONS: Please answer how much you agree with the following statements about your dating or marital partner. Note: If you are not currently in a dating or marital relationship with someone, answer these questions with respect to a former partner or a relationship that you would like to have with someone. (1=not at all, 7=completely agree)

1. It helps to turn to this person in times of need.	1	2	3	4	5	6	7
2. I usually discuss my problems and concerns with this person.	1	2	3	4	5	6	7
3. I talk things over with this person.	1	2	3	4	5	6	7
4. I find it easy to depend on this person.	1	2	3	4	5	6	7
5. I don't feel comfortable opening up to this person.	1	2	3	4	5	6	7
6. I prefer not to show this person how I feel deep down.	1	2	3	4	5	6	7
7. I often worry that this person doesn't really care for me.	1	2	3	4	5	6	7
8. I'm afraid that this person may abandon me.	1	2	3	4	5	6	7
9. I worry that this person won't care about me as much as I care about him or her.	1	2	3	4	5	6	7

Thank you for completing this questionnaire!

The purpose of this questionnaire is to better understand how people interact with music and social networks on a daily basis. Specifically, you have just answered questions about yourself and your social network use.

If you have any questions or would like further information about this research study, please email researchaboutlistening@gmail.com.

This research study is led by Amanda Krause, a PhD student at Heriot Watt University. Additionally, you can find information and participate in other studies by visiting www.researchaboutlistening.com.

Appendix U

Participant Information and Consent Form

14 February 2012

Title of Research: Music on Facebook

Name of Researchers:
Amanda Krause, Researcher, aek5@hw.ac.uk
Adrian North, Research Supervisor, a.north@hw.ac.uk

Purpose of the Research:
Under the supervision of Adrian North, Professor at Heriot Watt University, Amanda Krause, a post-graduate student in Applied Psychology, is conducting research on how individuals interact with music on a daily basis. The purpose of this study is to examine how individuals access and listen to music within the context of social media.

What You Will Be Asked to Do:
You will be asked to complete a questionnaire, which should take no more than 15 minutes. This questionnaire includes questions about your age, gender, occupation, and whether you consider music and technology important to your identity. You'll also answer the degree to which a number of different statements represent yourself and about how you interact with music on the social networking website Facebook. After completing the questionnaire, your participation in this study is complete.

Discussing Your Participation:
If you have any questions prior to participating, please do not hesitate to ask. Following your participation, you will also receive a debriefing sheet and be able to ask any other questions.

Risks:
We do not foresee any risks or discomfort from your participation in the research.

Voluntary Participation and Right to Withdraw:
Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the researcher or Heriot Watt University either now or in the future.

Confidentiality:
The data from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. Identifying information will be stored separately from the response data and only research personnel will have access to the data. After the study is completed, only the response data will be held for research use.

Questions About the Research?
If you have questions about the research in general or about your role in the study, please feel free to contact Amanda Krause (aek5@hw.ac.uk) or Adrian North (a.north@hw.ac.uk).

Thank you for your participation in this research study.

By signing this form, I am attesting that I have read and understand the nature of this project and consent to participate in this study.

Participant Signature: _____ Date: _____

Appendix V

Questionnaire

The aim of this study is to explore how individuals interact with music on Facebook. Remember that your participation is completely voluntary and that you have the right to withdraw at any time. Thank you for your participation!

About Yourself

Please mark with an 'X': _____ Female _____ Male

Age: _____ Occupation: _____

Nationality: _____ Country of Residence: _____

Do you have a university level qualification (e.g., Bachelor's degree)? _ Yes _ No

How important do you consider the following to be in your life?
(Please mark with an 'X', 1=not at all, 7=extremely)

Music	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7
Technology	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7

On average, how many hours do you listen to music daily? _____ hours

On average, how many hours do you interact with technology daily? _____ hours

DIRECTIONS: For each pair, mark your answer close to the adjective which you believe better describes yourself. The more appropriate that adjective seems, the closer you put your choice.

Uncreative	__	__	__	__	__	__	__	Creative
Lazy	__	__	__	__	__	__	__	Hard-Working
Shy	__	__	__	__	__	__	__	Outgoing
Headstrong	__	__	__	__	__	__	__	Gentle
Nervous	__	__	__	__	__	__	__	At Ease

DIRECTIONS: Please indicate how strongly you agree with the following statements.
(1=not at all, 7=completely)

Music is central to my identity.	1	2	3	4	5	6	7
Music technology is central to my identity.	1	2	3	4	5	6	7
Technology is central to my identity.	1	2	3	4	5	6	7
Web-based Cloud technology is central to my identity.	1	2	3	4	5	6	7

Please mark the degree to which you agree with the following statements.
(1=not at all, 5=completely)

I am confident about my ability to use …

… web based cloud music technology.	1	2	3	4	5
…the general aspects of having a Facebook account.	1	2	3	4	5
…Facebook applications (apps).	1	2	3	4	5
…music apps within Facebook.	1	2	3	4	5

DIRECTIONS: Please mark the degree to which the statements below describe yourself. (1=not at all, 5=very well)

NOTE: DLT stands for 'Digital Listening Technology' which broadly refers to technology, applications, and devices that allow you to listen to music digitally. These include, but are not limited to, computer applications (such as iTunes, Winamp, etc.), mobile devices (such as MP3 players, phones, and tablets), Internet streaming applications (such as Internet radio stations, YouTube, Vevo, Pandora, etc.), and cloud-based applications (such as Spotify, Amazon, iCloud).

I usually provide information about new DLT to others.	1	2	3	4	5
Using DLT bores me.	1	2	3	4	5
I feel confident using DLT.	1	2	3	4	5
When using DLT, I am playful and spontaneous	1	2	3	4	5
I can use DLT only with help.	1	2	3	4	5
I do not intend to use DLT in the future.	1	2	3	4	5
I regularly seek new DLT experiences.	1	2	3	4	5
Even if I haven't heard about it before, I will consider trying a new DLT.	1	2	3	4	5
DLT is not beneficial to me.	1	2	3	4	5
Other people rarely come to me for advice about DLT.	1	2	3	4	5
I have fun interacting with DLT.	1	2	3	4	5
The range of DLT options available to me are overwhelming at times.	1	2	3	4	5
I find DLT useful.	1	2	3	4	5
My opinions about DLT do not seem to count with others.	1	2	3	4	5
I find DLT easy to use.	1	2	3	4	5
I often influence people's opinions about DLT.	1	2	3	4	5
I view DLT only as a tool to access music.	1	2	3	4	5
I can figure out DLT without help.	1	2	3	4	5
In general, I am the last in my circle of friends to know about the latest DLT.	1	2	3	4	5
I plan to use DLT in the future.	1	2	3	4	5
I like to keep things simple when using DLT.	1	2	3	4	5
In general, I am hesitant to try new DLT.	1	2	3	4	5
I like to find some new ways to use DLT.	1	2	3	4	5
I find DLT intimidating.	1	2	3	4	5
I know about new DLT before other people.	1	2	3	4	5
I find using DLT frustrating.	1	2	3	4	5

I believe in my capabilities of using...

… web based cloud music technology.	1	2	3	4	5
…the general aspects of having a Facebook account.	1	2	3	4	5
…Facebook applications (apps).	1	2	3	4	5
…music apps within Facebook.	1	2	3	4	5

I have mastered the skills necessary to use…

… web based cloud music tech the general aspects of Facebook.	1	2	3	4	5
…the general aspects of having a Facebook account.	1	2	3	4	5
…Facebook applications (apps).	1	2	3	4	5
…music apps within Facebook.	1	2	3	4	5

DIRECTIONS: Please mark the degree to which the statements below describe yourself. (1=not at all, 5=very well)
NOTE: SNS stands for 'Social Network Sites', referring to web-based, user-generated content sites that provide platforms for information sharing, video sharing, photo sharing, and blogging. Examples of social networks include, but are not limited, to Facebook, Twitter, Myspace, LinkedIn, Blogger, YouTube, Bebo, Friendster, Google+, Wordpress, Tumblr, CouchSurfing, DailyMile, Flickr, Foursquare, and LastFM.

I usually provide information about new SNS to others.	1	2	3	4	5
Using SNS bore me.	1	2	3	4	5
I feel confident using social SNS.	1	2	3	4	5
When using SNS, I am playful and spontaneous.	1	2	3	4	5
I can use SNS only with help.	1	2	3	4	5
I do not intend to use SNS in the future.	1	2	3	4	5
I regularly seek new social network experiences.	1	2	3	4	5
Even if I haven't heard about it before, I will consider trying a new SNS.	1	2	3	4	5
SNS are not beneficial to me.	1	2	3	4	5
Other people rarely come to me for advice about SNS.	1	2	3	4	5
I have fun interacting with SNS.	1	2	3	4	5
I find the range of SNS options available to me overwhelming at times.	1	2	3	4	5
I find SNS useful.	1	2	3	4	5
My opinions about SNS do not seem to count with others.	1	2	3	4	5
I find SNS easy to use.	1	2	3	4	5
I often influence people's opinions about SNS.	1	2	3	4	5
I view SNS only as a tool to access information.	1	2	3	4	5
I can figure out SNS without help.	1	2	3	4	5
In general, I am the last in my circle of friends to know about the latest SNS.	1	2	3	4	5
I plan to use SNS in the future.	1	2	3	4	5
I like to keep things simple when using SNS.	1	2	3	4	5
In general, I am hesitant to try new SNS.	1	2	3	4	5
I like to find some new ways to use SNS.	1	2	3	4	5
I find SNS intimidating.	1	2	3	4	5

I know about new SNS tools before other people.	1	2	3	4	5
I find using SNS frustrating.	1	2	3	4	5

On average, how many minutes do you spend on Facebook daily? _____min

On average, what percentage of your leisure time are you on Facebook daily? ____%

On average, what percentage of the time you spend on Facebook are you using a music app? _____%

DIRECTIONS: Please indicate how often you use the following components of Facebook? (1=never, 7=always)

Changing your status update	1	2	3	4	5	6	7
Posting on friends' walls	1	2	3	4	5	6	7
Sending private messages	1	2	3	4	5	6	7
Reading your news feed	1	2	3	4	5	6	7
Viewing others' profile pages/walls	1	2	3	4	5	6	7
Uploading/creating photo albums	1	2	3	4	5	6	7
Playing Facebook games	1	2	3	4	5	6	7

Posting videos/links related to music/musicians as part of your status	1	2	3	4	5	6	7
Posting videos/links related to music/musicians on people's walls	1	2	3	4	5	6	7
Clicking on links/watching videos related to music that friends have posted as part of their status	1	2	3	4	5	6	7
Following links/watching videos related to music that friends have posted on your wall/others' walls	1	2	3	4	5	6	7
Reading posts by friends regarding the music they've listened to on an app within Facebook	1	2	3	4	5	6	7
Interacting with pages/groups/events that pertain to musicians/bands/concerts	1	2	3	4	5	6	7
Listening to music via a Facebook app (i.e., Spotify, Pandora)	1	2	3	4	5	6	7

Do you use a music app on Facebook? __ No __ Yes

If you use a music app on Facebook, which one do you utilize most often?
_____

**If people indicated that they use a music app on Facebook, they also completed the following section.
DIRECTIONS: Please indicate the degree to which you agree that the following are reasons that you use music apps on Facebook.
(1=not at all, 5=very much true)

To share knowledge with others	1	2	3	4	5
To communicate with friends and family	1	2	3	4	5
To relax	1	2	3	4	5
Because I'm bored	1	2	3	4	5
Because I want someone to do something for me	1	2	3	4	5
To promote the musician/band I work for	1	2	3	4	5
To express myself freely	1	2	3	4	5
Because it's an easy way to stay in touch with people	1	2	3	4	5
Because I have nothing better to do	1	2	3	4	5
To provide information	1	2	3	4	5
Because it's a habit	1	2	3	4	5
Because it's easy to use	1	2	3	4	5
To tell others what to do	1	2	3	4	5
To share information that might be useful to others	1	2	3	4	5
Because it's enjoyable	1	2	3	4	5
To see what is out there/ discover new music	1	2	3	4	5
Because everyone else is doing it	1	2	3	4	5
To promote my own music	1	2	3	4	5
Because it's fun to try out new things like this	1	2	3	4	5
To share information about my special interests	1	2	3	4	5
Because it provides a distraction	1	2	3	4	5
To meet people with similar interests as me	1	2	3	4	5
To promote the music/musicians I like	1	2	3	4	5
To participate in discussions	1	2	3	4	5
Because it's entertaining	1	2	3	4	5
To get feedback on information I have found	1	2	3	4	5
Because it's a popular thing to do	1	2	3	4	5
Because I just like to use it	1	2	3	4	5

Thank you for completing this questionnaire!

The purpose of this questionnaire is to better understand how people interact with music on a daily basis. Specifically, you have just answered questions related to the ways in which you access and listen to music within Facebook.

If you have any questions or would like further information about this research study, please email researchaboutlistening@gmail.com.

Appendix W

Topic	Item	Adapted from
Control	Because I want someone to do something for me	Baek, et al., 2011; Papacharissi & Rubin, 2000
	To tell others what to do	Baek, et al., 2011; Papacharissi & Rubin, 2000
Convenience and entertainment	Because I just like to use it	Baek, et al., 2011; Papacharissi & Rubin, 2000
	Because it provides a distraction	Baek, et al., 2011
	Because it's an easy way to stay in touch with people	Baek, et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000
	Because it's easy to use	Baek, et al., 2011
	Because it's enjoyable	Baek, et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000
	Because it's entertaining	Papacharissi, 2002
	Because it's fun to try out new things like this	Papacharissi, 2002
	To communicate with friends and family	Baek, et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000
	To relax	Baek, et al., 2011
Information sharing	To get feedback on information I have found	Baek, et al., 2011
	To provide information	Baek, et al., 2011; Papacharissi, 2002
	To see what is out there/ discover new music	Papacharissi & Rubin, 2000
	To share information about my special interests	Baek, et al., 2011; Papacharissi, 2002
	To share information that might be useful to others	Baek, et al., 2011; Papacharissi, 2002
	To share knowledge with others	Baek, et al., 2011; Papacharissi, 2002
Information sharing/ interpersonal utility	To express myself freely	Baek, et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000
	To participate in discussions	Papacharissi & Rubin, 2000
Interpersonal utility	To meet people with similar interests as me	Baek, et al., 2011; Papacharissi & Rubin, 2000

Pass the time	Because everyone else is doing it	Baek, et al., 2011; Papacharissi, 2002
	Because I have nothing better to do	Baek, et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000
	Because I'm bored	Baek, et al., 2011; Papacharissi, 2002; Papacharissi & Rubin, 2000
	Because it's a habit	Baek, et al., 2011
	Because it's a popular thing to do	Baek, et al., 2011; Papacharissi, 2002
Promoting work	To promote my own music	Baek, et al., 2011
	To promote the music/musicians I like	Baek, et al., 2011
	To promote the musician/band I work for	Baek, et al., 2011
Application requirement	Because I had to use Facebook to create an account	